ENVIRONMENTAL MANAGEMENT PROGRAMME FOR THE PROPOSED GARAGE ON PORTION 134 OF FARM 559, ROOI ELS

Fynbos Rooi Els (Pty) Ltd

October 2025

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Please note: An EMPr dated January 2024 is already in place for the development of a house, ancillary building and conservancy tank on the property. This EMPr addresses the same aspects as the previous EMPr where applicable, although it is focused on the development of an additional garage within the same approved development footprint.

Key terms and abbreviations

Breede-Olifants Catchment Management Agency (BOCMA) – the local catchment management agency mandated to enforce the National Water Act on behalf of DWS.

Contractor –

(i) the main or specialised contractor as engaged by the Owner from time to time for the execution of the works, including all sub-contractors appointed by the main contractor of his own volition for the execution of parts of the works;

(ii) any other contractor from time to time engaged by the Owner directly in connection with any part of the Works which is not a nominated subcontractor or a subcontractor to the main contractor.

Council – the local authority, Overstrand Local Municipality, its successors in title or assigns.

Department of Environmental Affairs and Development Planning (DEA&DP) – the provincial authority for sustainable environmental management and integrated development planning.

Developer/ Owner/Applicant – Fynbos Rooi Els (Pty) Ltd

Environmental Authorisation (EA) – the decision issued by the competent authority in terms of the NEMA Regulations.

Environment Conservation Act, 1989 (ECA) - to provide for the effective protection and controlled utilization of the environment and for matters incidental thereto, repealed and replaced by NEMA.

Environmental Management Programme (EMPr) - an environmental management tool used to ensure that undue or reasonably avoidable adverse impacts of the construction, operation, and decommissioning of a project are managed, and that positive benefits of the projects are enhanced.

Environmental Control Officer (ECO) – a suitably qualified environmental consultant to be appointed by the Owner to oversee the implementation of the EMPr.

General Authorization – registration of a water use issued by the competent authority (BOCMA) in terms of the NWA.

goFPA - Greater Overberg Fire Protection Agency

Heritage Western Cape (HWC) – provincial body responsible for enforcing the National Heritage Resources Act (Act 25 of 1999) in the Western Cape.

Method statement (MS) describes the **environmental** management measures to be applied to the establishment and operation of the construction site during various phases of the project.

National Environmental Management Act (Act 107 of 1998, as amended) (NEMA) – national legislation that provides principles for decision-making on matters that affect the environment.

National Water Act (NWA Act 36 of 1998) – national legislation that provides principles for decision making on matters that relate to watercourse/water use/water bodies.

Overberg District Municipality (ODM) – the district municipality.

SWSA – Strategic Water Source Area.

Workdays – the days of the week excluding Sundays and public holidays.

Works – the building construction operations and all related and incidental works such as, but not limited to, site works, earthworks, roads, landscaping, and the installation of services in connection with the execution and carrying to completion of the approved development plan.

SECTION 1: CONTEXTUAL INFORMATION

1.1. Background

This report aims to supply an EMPr for the proposed construction of a garage to be located on Portion 134 of Farm 559. The site is situated approximately 1km Southeast of the rural settlement of Rooi Els along the R44 (refer Figure 1). The property is accessed off the R44 via a minor road, which splits to lead to a neighbouring property to the South (Portion 46 of Farm 559), and northwards, into the proposed development area. Aerial imagery indicates that a residential dwelling and associated access was present within the proposed development site by August 1988. Between February and March 2017, a fire destroyed the original house, and the site was subsequently abandoned.

In 2023/2024, a Basic Assessment process was undertaken for the proposed development of a residential dwelling and a garage on two separate development footprints within the property (refer to **Error! Reference source not found.**). In April 2024, Environmental Authorisation was granted (DEADP Ref. 16/3/3/1/E2/33/1059/23) for the development of the residential dwelling. The authorization included the construction of a house to replace a previous house destroyed by fire in 2017; an ancillary building and a conservancy tank located within a development footprint totaling approximately 1 155m². Subsequently, the Overstrand Municipality approved building plans in terms of the National Building Regulations, for a house, ancillary building, and conservancy tank with a combined footprint of 480m², located within the EA-approved development footprint of 1 155m^2. Construction of the Municipal-approved house and ancillary building is currently underway.

The previously proposed garage, located on a separate development footprint, was not authorized as part of the EA in 2024

The applicant now proposes to expand the approved residential dwelling by adding a garage with a building footprint of approximately 328m^2, located entirely within the previously approved EA development footprint of 1 155m^2. No additional indigenous vegetation clearance or expansion of the disturbed area is required. The proposed garage will accommodate the owner's everyday vehicles, serve as private storage for the owner's collection of vintage cars and motorcycles, and house equipment required for on-site rehabilitation, conservation, and fire protection activities. The total development footprint of all buildings with the inclusion of the new garage will be 808m² inside the EA approved 3[illegible]).

The proposed development site is of an ecologically sensitive nature, and several wetlands were identified by aquatic specialist, Dr Liz Day, in the vicinity of the proposed development. The preferred site development plan in relation to these watercourses are presented in Figure 2.

This EMPr describes mitigation measures in detail, and is prescriptive, identifying specific individuals or organisations responsible for undertaking specific tasks to ensure that impacts on the environment are minimised during construction and operational phases of the development. This EMPr is an open-ended document and information gained during on-going monitoring of procedures on site could lead to changes in the recommendations and specifications of this document.

Summary of proposed project:

- Addition of a garage (±328m² building footprint) within the existing, EA-approved development footprint (1 155m²), alongside the current residential structure.
- No expansion beyond the previously authorised development footprint and no additional indigenous vegetation clearance required.
- Access road is existing, and services are present within the existing road reserve.
- An existing borehole supplies domestic water needs.

Figure 1: Location of the development site in proximity to Rooi Els and R44.

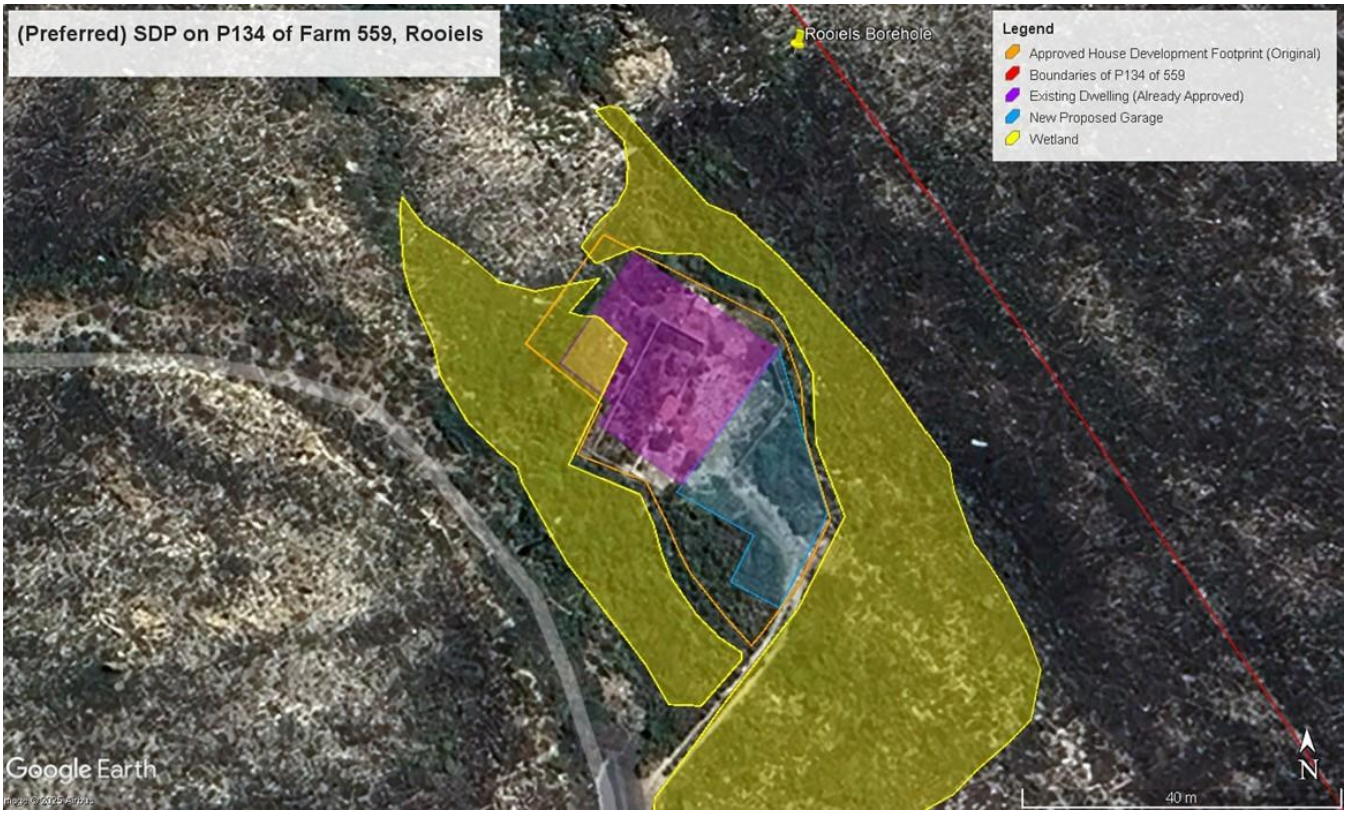


Figure 2: Site map indicating the preferred development layout in relation to onsite wetlands identified by the aquatic specialist Dr Liz Day in 2023

1.2. Purpose of the EMPr

The purpose of the EMPr is to ensure that the environmental impacts associated with the proposed activities are managed, mitigated, and kept to a minimum during the different phases of the project.

In general, the EMPr can consist of the following phases: planning & design; pre-construction activities; construction activities; operational activities and rehabilitation &/or decommissioning. However, the need to include all the above phases depends on the scale and scope of each individual project.

For the purposes of this application the following three categories are largely defined:

- Planning, Design & Pre-construction Phase: This section relates to the demarcating of the proposed activity footprint areas and no-go areas.
- Construction Phase: This section relates to the planned scope of construction activities.
- Operational Phase: This section is intended to guide the operational aspects associated with the infrastructure in line with relevant legislative requirements and the recommendations made by the specialist consultant (s).

Decommissioning refers to the actual removal of the operating assets of the project after completion of the life cycle - in other words the decommissioning of the garage and related infrastructure. It is highly unlikely that the garage will be decommissioned and closed, and therefore it is not further addressed in this document.

1.3. Status of the EMPr

The EMPr must form part of all contractual documents for this project. The Environmental Authorization ascribes legal status to the EMPr and any subsequent amendments thereto. The EMPr includes all relevant documentation within this report and/or referred to within it. The approval of the EMPr by DEA&DP will require that the applicant/ landowner and all appointed contractors must comply with the requirements therein. Any amendments/ changes/ upgrades to the EMPr will require submission to and approval by DEA&DP.

1.4. Comment to the EMPr

The EMPr forms part of the contract identifying and specifying the procedures to be followed by the Contractor (construction team) to eliminate or reduce adverse impacts of the construction works on the environment. Should an employee of the Contractor persistently fail to observe provisions of the EMPr, the Environmental Control Officer (ECO) can recommend that the employee or the contractor be removed from the site.

A copy of the EMPr will be issued to each contractor at the tender stage to allow for costs of implementing the EMPr to be included in the cost estimates. This will also ensure that each contractor is aware of his responsibilities prior to commencing work. Copies of the EMPr will be made available to all senior personnel on site, who will be required to familiarize themselves with the contents of the document and to follow procedures accordingly.

Each Contractor involved in the project will be expected to sign for, and thus acknowledge receipt of the final EMPr, and thereby will be expected to abide by the specifications of the document, as well as annexures and any amendments thereto. The landowner will be responsible for the implementation of the EMPr.

NOTE: This EMPr is based on the findings of the Ecological Impact Assessment (November 2022), the Aquatic Ecosystems Impact Assessment (February 2023), the associated DWS risk matrix for the S21(c) and (i) activities, and the Freshwater Ecological addendum letter dated 27 September 2025. The identified risks have been incorporated into the EMPr, and additional general risks have been included. The EMPr must be implemented in conjunction with conditions contained in the Environmental Authorization. The applicant and ECO must use the above-mentioned documents during and after the Pre-construction/ Planning, Construction and Operational phases of the project. This should also become a condition in the Environmental Authorization.

SECTION 2: PROJECT PHASES

The following descriptions of proposed activities related to the construction and operation of the proposed garage development have been identified:

2.1. Planning, Design & Pre-construction Phase:

- Appointment of ECO,
- Demarcating of the proposed activity footprint areas and no-go/ buffer areas,
- Environmental awareness training of all construction staff,
- Compilation of Method Statements and authorization by ECO,
- Programming of construction events,
- Establishment of communication and contractual network,
- Site survey and the placement of boundary pegs.

2.2. Construction Phase:

- Establishment of firebreaks around the 1 155m^2 development footprint (in November) –
    - Firebreaks should be within 15m of the development footprint and should not be more than 5m wide.
    - Cutting should be undertaken using handheld brush cutters and no soil disturbance should take place.
    - Firebreaks for the farm should also be established and maintained on an annual basis.

- Construction of the new garage, all within the authorized 1 155m^2 development footprint.
- The work in this phase makes provision for the movement of heavy machinery onto areas where work is to be done.
- This phase also includes site preparation (establishment of construction camp) and the rehabilitation of the affected areas (terrestrial and aquatic) once construction is completed.

NOTE: The first two phases can overlap and are generally also referred to collectively as the Development Phase. The Impact Assessment for the project (Appendix J to the BAR) was grouped according to the Development Phase (Planning, Design and Construction) and the Operational phase.

2.3. Operational Phase:

- Ongoing removal of all alien invasive vegetation from the site.
    - All alien invasive plants should be removed from the site.
    - Monitoring for the presence of alien invasives should be ongoing and where necessary removal should take place every second year.
    - Should a fire pass through the site, monitoring and clearing of seedlings should be undertaken within a year.
- Control of permissible non-invasive alien vegetation such as herbs and vegetables within the development footprint.
    - Please note that alien Kikuyu grass is not permitted anywhere on the site and must be removed.
- Conserve and protect onsite wetlands:
    - No canalization of watercourses is permitted.
    - No drainage of watercourses is permitted.
- Maintain development infrastructure such as stormwater and wastewater infrastructure and the existing access road in a good functional state.
    - Manage runoff from hardened surface such that erosion and polluted run-off is minimized.
- Cut firebreaks around the development once a year in November.
    - Firebreaks should be within 15m of the approved 1155m^2 development footprint and should not be more than 5m wide.
    - Cutting should be undertaken using handheld brush cutters and no soil disturbance should take place.
    - Firebreaks for the farm should also be established and maintained on an annual basis.
- No expansion of the authorized development footprint is permitted.

SECTION 3: RELEVANT LEGISLATION AND POLICIES

This EMPr aims to highlight historic design, capacity, management and use issues and proposes a means to manage these within the framework of environmental best practice, the guiding principles of the National Environmental Management Amendment Act (Act 62 of 2008) and the requirements of the National Water Act (Act 36 of 1998).

The following is a list of the legislation that may be pertinent to the project and its long-term operational management. All activities on site must ensure compliance with the provisions of the legislation as applicable:

- The Constitution of the Republic of South Africa (Act 108 of 1996),
- National Environmental Management Act (Act 107 of 1998) – NEMA,
- Government Notices 327, 325 and 324 in terms of NEMA,
- National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004),
- National Environmental Management Waste Act (No 59 of 2008),
- Natural Heritage Resources Act 1999 (Act 25 of 1999),
- National Water Act 1998 (Act 36 of 1998) – NWA,
- Occupational Health and Safety Act (No. 85 of 1993),
- National Veld and Forest Fire Act, Act 101 of 1998.

SECTION 4: RESPONSIBILITIES AND ENFORCEMENT OF THE EMPr

4.1. The Landowner/ Applicant

The Landowner is accountable for the potential impacts of the activities that are undertaken and is responsible for managing these impacts. The Landowner has the overall environmental responsibility to ensure that the implementation of the construction and operational requirements complies with the relevant legislation and the conditions of the approved EMPr.

The Landowner must ensure that he/she is fully familiar with the requirements of this EMPr, any relevant Environmental Authorisation, General Authorisation (water use) or any other legally binding documentation, but training on the requirements of the EMPr will also be presented to the Landowner by the ECO upon appointment.

Environmental awareness training of all staff/contractors involved in the EMPr work activities will be completed by the Landowner or ECO on their roles and responsibilities, compliance to the EMPr and required monitoring as outlined in Section 7 of this document.

4.2. Engineers and Contractors

The Engineers and Contractors, where applicable, are responsible for physically carrying out the relevant activities. The responsibilities indicated here are also relevant to Sub-Contractors.

The responsibilities of the Engineers and Contractors include but are not limited to the following:

- Be conversant with the EMPr, any relevant Environmental Authorisation, GA or any other legally binding documentation;
- Have a responsibility to adhere to any conditions and recommendations laid out in above mentioned documentation;
- Prevent actions that may cause harm to the environment;
- Be responsible for any remedial activities in response to an environmental incident;
- Review and amend any construction activities to align with the EMPr and Best Practice Principles;
- Ensure compliance of all site personnel and / or visitors to the EMPr and any other authorisations.

4.3. Environmental Control Officer (ECO)

A suitably qualified individual will be designated and appointed by the Landowner to fulfill the role of Environmental Control Officer, to ensure and oversee the implementation of the EMPr on site in its entirety. The role of the ECO is essentially seen as an interactive one and should include bi-weekly (twice a month) site visits during the

construction phase. Daily site visits should be undertaken as and when high sensitivity development activities are undertaken at the discretion of the ECO. A final site visit will be required one month post completion of construction.

The responsibilities of the ECO during the life span of the project will include:

- To conduct awareness training on the sensitivity of the site and implementation of the EMPr;
- To demarcate no-go areas on site;
- To review method statements and to determine the most environmentally sensitive options of *modus operandi* for the development tasks;
- To oversee the implementation of environmental procedures set out in this document;
- To attend site meetings and report on environmental issues;
- To receive notice and minutes of all site meetings;
- To maintain open and direct communication with the Landowner, contractors and authorities and to report on environmental issues;
- To monitor contractors, the EMPr and the implementation thereof; followed by reporting to the relevant authorities;
- To take immediate action on site where clearly defined no-go areas are violated, or in danger of being violated, and to inform the landowner and Site Manager immediately and the action taken;
- To keep an up-to-date record of works on site, as they relate to environmental issues in the Site Diary including records of non-compliance incidents;
- To be contactable by the public regarding matters of environmental concern as they relate to the development;
- To hold monthly meetings and obtain specialist environmental input if required.

Reporting and record keeping by the ECO should include monthly ECO reports (during construction), a final report one month after completion of the construction phase, photographic record keeping for all site visits and records of communication to and from relevant authorities. The Construction Phase monthly ECO reports should be submitted to the Overstrand Environmental Management Section and CapeNature to monitor compliance of the approved EMPr.

4.4. The Competent Authority (DEA&DP)

DEA&DP will review the EMPr and on approval they may have the following role to play:

- Review and monitor implementation of EMPr;
- Review whether there is compliance by the Landowner;
- Perform random control checks;
- Review ECO, incident and audit reports;
- Enforce legal mechanisms for contraventions of the EMPr.

4.5. Department of Water and Sanitation (BOCMA)

The DWS is the national authority that authorizes and licenses the use of water and water resources in South Africa, and BOCMA is the designated representative in this area. The BOCMA has authorized the GA, which will have to be implemented with this EMPr.

SECTION 5: IMPACTS AND MITIGATION

The following possible impacts and associated mitigation measures have been identified with the proposed scope of work for the project phases:

5.1. Development phase

	Impact	Proposed mitigation
1	Increased hardened surfaces within the approved development footprint	• The development must be confined to the already-approved development footprint or a lesser extent. • No new parking or road access areas may be created beyond what is currently proposed. • Existing indigenous vegetation abutting the final built structures should be retained.
2	During the construction phase a small amount of smoke, noise (from machines) and dust could be generated.	• Restrict working hours to normal construction working hours daytime 07:00 to 19:00, and half day on Saturdays. No work may be undertaken on public holidays or Sundays. • Restrict areas cleared to where construction is taking place. • Cleared areas must be provided with a suitable cover and must not be left open for extended periods. • Stockpiles of erodible materials must be appropriately covered (e.g., geotextile weighted with bricks) and located such that they will have the lowest possible impact given prevailing wind direction. • Shield dust blowing onto roads and adjacent land users. • If needed, dust can be dissipated with water. • Maintain vehicles and machinery in good working condition.
3	The presence and operation of construction machinery on site will create a physical impact on the site.	• All construction vehicles and machinery must be confined to access roads and approved development footprints. • A suitable speed limit (20-40km/h) must be enforced on all access roads. • Maintain vehicles and machinery in good working condition. • Development footprint to be fenced and all work confined to within this footprint. • Fencing must allow access from the road sides only. • Fencing around the disturbance footprint may be temporary but must nevertheless comprise steel mesh fencing that will indicate a significant barrier to construction workers and contractors – no cement / concrete may be used in installation of fencing; • Areas outside of the fenced areas, excluding the existing road, must be regarded as “no go areas” during construction – this would require considerable construction phase planning, which must be shown in detailed design-phase documentation • No blasting of rock may take place – the development footprints need to be based on a “tread lightly” approach. • Existing indigenous vegetation abutting the final built structures should be retained as far as possible and the creation of a “garden” / lawn areas in the wetland seeps should not take place.
4	Employment opportunities during construction activities - The development will lead to temporary employment	• Not required.

	opportunities during construction.	
5	General waste from construction site camp.	• An on-site waste management programme must be implemented that effectively controls the management and disposal of waste on the site during construction • Minimise waste generated on site. • Provide multiple secured onsite bins with weighed down lids that effectively contain waste. (NB to prevent scavenging by wildlife and wind dispersal) • Separate food waste from recyclable waste onsite through use of clearly labelled bins. • Where necessary, make use of secured skips for large construction waste. Skips should be covered to prevent wind blown waste. Also during transport from site to landfill. • All bins (and skips) must be regularly emptied, and waste must be appropriately disposed of at registered offsite waste disposal site. • No bins (or skips) may be used to overflow. • Waste sites may only be accommodated along the existing road footprint or within the proposed development footprint (including the authorized development footprint). These areas must be agreed on prior to construction commencement and must be managed by the ECO (or similar) in terms of best practice codes. • Area left clean and clear of all building waste after completion of construction phase
6	Possible sedimentation resulting from the stockpiling of construction materials and use of fill material, and resultant water quality impairment downstream.	• Install 20cm high sediment fences of shade cloth or a similar material at the boundary of the construction area adjacent to the onsite wetlands. • A suitable location for stockpiling erodible construction material must be identified by the ECO and stockpiles of erodible material must be covered by an erosion blanket (geotextile weighted with bricks). • Stockpiles should be no higher than 1.5m and suitably shaped to prevent erosion. • Stockpiles and all other aspects of construction that require storage space may only be accommodated along the existing road footprint or within the proposed development footprint (including the authorized development footprint). These areas must be agreed on prior to construction commencement and must be managed by the ECO (or similar) in terms of best practice codes. • No construction that takes place from 1m above natural ground level or lower and that requires any active excavation, use of cement, concrete, sand, gravel or any other material likely to wash into wetlands abutting construction areas may take place between 1 May and 30 September of any year, to minimize impacts to sensitive areas.
7	Possible water quality impairment because of the presence and operation of construction vehicles and machinery near and within onsite watercourses which could result in fuel spills and other contaminant inputs.	• Maintain vehicles and machinery in good working condition. • All construction vehicles and machinery must be confined to access roads and approved development footprints. • Inspect all construction vehicles and machinery for possible fuel/ oil leaks. • Refill with fuel/ oil restricted to bunded area within the site camp. Maintenance of vehicles confined to site camp. • Place drip trays under vehicles at night. • Any leaks/ spills should be cleaned immediately, and contaminated soils disposed of to appropriate landfill site. • Spill kit to be kept on site • No construction that takes place from 1m above natural ground level or lower and that requires any active excavation, use of cement, concrete, sand, gravel or any other material likely to wash into wetlands abutting

		construction areas may take place between 1 May and 30 September of any year, to minimize impacts to sensitive areas.
8	Disturbance to the bed and banks of the onsite seep wetlands during construction of the garage.	• A temporary fence must be installed around the approved disturbance footprint. No construction activities may take place outside the fenced area. • The fence must be removed after the development has been completed and any affected natural areas must be appropriately rehabilitated. • Where construction vehicles need to access sensitive areas/ wetlands, there should be one preferred access point to minimise disturbance • Following completion of construction, a freshwater ecologist must assess the construction sites and outline measures, where necessary, for rehabilitation of disturbed wetland areas, including, where necessary, requirements for manual or machine re shaping, manual ripping of compacted areas and replanting of disturbed zones. Implementation of these measures must be overseen by the ECO (or similar) in collaboration with the project freshwater ecologist. • No blasting of rock may take place – the development footprints need to be based on a “tread lightly” approach
9	The wetland surrounding the development footprint will be rehabilitated after completion of construction.	• Alien invasive vegetation removed should be chipped and used on site for mulching or covering bare areas to be stabilized. • When the vegetation removed is not suitable for chipping/ mulching it should be suitably disposed of at the nearest landfill site
10	Potential Visual Impacts	• Limit vegetation clearance to the approved development footprint only. • Cutting for level footprint into the topography opposed to sitting on top, no forward or upward encroachment. • Rehabilitate the old roadworks stockpile area. • Make use of natural materials, like stone and wood for finishes. • All roof materials should be charcoal coloured roof sheeting which meets 30-year warranty requirements. All roof hardware (vents, stacks, flashing etc) must colour match the roofing materials or be encased into structures. • Roof pitches should be as flat as possible as per the concept on the SDP. • Only painted plaster or bagged walls with a matt finish to be applied and no face-brick. • No bright or light colour paint to be used on the plastered walls, use only natural darker tones. Tones of grey to charcoal have been proven as the best mitigating colour for visual impact. • The colours of windows, fascia’s, doors, shutters etc should be consistent and compliment the wall colours, preferably natural wood, grey or charcoal frames. • Lighting is required for security and safety. However, all lighting shall be directed solely towards the buildings or downwards if attached to the building. • Ground lighting should be mounted on low bollards. • No high mast lighting will be allowed, and no lighting shall be directed off the site into the surrounding nature. • Energy saving lights are required and no “naked” spotlights will be allowed. • Warm white outside light bulbs are to be used. • Landscaping should only take place with indigenous and endemic plants. • Due to the high windspeeds exotic trees do not grow successfully, however some indigenous shrubs and trees do reach considerable heights.

		• Due to fire risk it is advised that “fire-scaping” is applied by planting vegetation that is not prone to burn. • A local landscape consultant should be approached for advice on both wind and fire prone vegetation

5.2. Operational phase

	Impact	Proposed mitigation
1	The site will be utilized for residential and conservation purposes.	Not required
2	Disruption of the natural fire regime.	Cut firebreaks around the development once a year in November: • Firebreaks should be within 15m of the development footprint and should not be more than 5m wide. • Fire breaks must also be cut along the farm boundary as prescribed by the National Veld and Forest Fire Act (No. 101 of 1998). • Cutting should be undertaken using handheld brush cutters and no soil disturbance should take place.
3	Disturbance to natural land during repairs or replacement of service infrastructure.	• All services must be installed above ground within the already disturbed road reserve. • The conservancy tank must be installed on the side of the development adjacent to the road for easy access.
4	Alien invasive vegetation will be removed from the site.	• Vegetation removed should be chipped and used on site for mulching or covering bare areas to be stabilized. • Where the vegetation removed is not suitable for chipping/ mulching it should be suitably disposed of at the nearest landfill site.
5	Consumption of resources (water, electricity)	• Make use of energy and water efficient appliances. • Supplement electricity supply with onsite solar panels. • Use water wise indigenous vegetation for landscaping purposes where required.
6	Increased hardened surfaces within a sensitive area.	• Develop a suitable stormwater management plan (refer to Appendix D to this EMPr). • Raised boardwalks/decks/permeable surfaces should be used in preference to paving to allow the passage of seepage water beneath built structures • The development must be confined to the already-approved development footprint or a lesser extent. • No new parking or road access areas may be created beyond what is currently proposed • Stormwater dissipation measures must be included in architectural and road / parking design to ensure that runoff is dissipated to pre-construction levels within the total building footprints shown in Figures 1 and 2 – useful measures could include the use of gravel stormwater dissipation areas or “rain gardens” and the provision of extended detention areas within the disturbance footprints; rainwater tanks also provide some attenuation function, up until the point that they are full. The inclusion of grassblocks in the current proposed design is supported, provided that they overlie areas into which infiltration can occur (i.e. not overlying bedrock) – please refer to Appendix D to this EMPr for a conceptual stormwater runoff plan.

		• The required interventions must be quantified, shown on plan and approved by at least the project aquatic ecologist and preferably by relevant officials from Cape Nature and the local municipality.

SECTION 6: MANAGEMENT REQUIREMENTS AND OBJECTIVES

6.1. Planning and Design Requirements

To avoid environmental impacts related to the repair or replacement of service infrastructure, all services must be installed above ground within the already disturbed road footprint.

The design of all buildings must facilitate the movement of surface and shallow subsurface flows immediately downstream of the building platform. Raised boardwalks / decks should therefore also be used in preference to paving, since the former would allow the movement of seepage water beneath built structures

The access road to the development may not extend outside of the existing access road footprint.

The existing natural vegetation adjacent to the approved disturbance footprint must be retained as far as feasibly possible. The wetland seeps adjacent to the proposed development may not be used for gardening purposes and no lawned areas should be established as part of the development. Landscaping must be limited to locally indigenous vegetation. Non-invasive non-indigenous plants may be kept within the development footprints provided they are controlled in containers.

The existing access road must be engineered such that runoff flows downslope rather than being diverted northeast (upslope) along the road. The use of shallow swales along the road edge may be required. If so, these must be located within the existing disturbed footprint.

Stormwater dissipation measures as per the concept stormwater runoff plan (Appendix D to this EMPr) must be included in architectural and road / parking design to ensure that the runoff from the site is effectively controlled within the approved disturbance footprint. Permeable grass block pavers will be used for this purpose.

The visual impact assessment undertaken for the proposed development found that the site is sporadically visible and due to topography mostly hidden. In order to mitigate the overall visual impact of the proposed development the following guidelines were outlined that should be incorporated into the planning and design of the proposed buildings:

- Development on the footprints as determined in the NEMA process.
- Limit vegetation clearance to approved development footprint only.
- Rehabilitation of the old roadworks stockpile area.
- Cutting for level footprint into the topography opposed to sitting on top, no forward or upward encroachment.
- The use of natural materials, like stone and wood for finishes.
- All roof materials are to be charcoal colored roof sheeting which meets 30-year warranty requirements. All roof hardware (vents, stacks, flashing etc.) must color match the roofing materials, or be encased into structures.
- Roof pitches should be as flat as possible as per the concept on the SDP.
- Only painted plaster or bagged walls with a matt finish to be applied and no face-brick.

- No bright or light color paint to be used on the plastered walls, use only natural darker tones. Tones of grey to charcoal have been proven as the best mitigating color for visual impact.
- The colors of windows, fascia's, doors, shutters etc. should be consistent and compliment the wall colors, preferably natural wood, grey or charcoal frames.
- Lighting is required for security and safety. However, all lighting shall be directed solely towards the buildings or downwards if attached to the building.
- Ground lighting should be mounted on low bollards.
- No high mast lighting will be allowed, and no lighting shall be directed off the site into the surrounding nature.
- Energy saving lights are required and no "naked" spotlights will be allowed.
- Warm white outside light bulbs are to be used.
- Landscaping should only take place with indigenous and endemic plants.
- Due to the high windspeeds exotic trees do not grow successfully, however some indigenous shrubs and trees do reach considerable heights.
- Due to fire risk it is advised that "fire-scaping" is applied by planting vegetation that is not prone to burning.
- A local landscape consultant should be approached for advice on both wind and fire prone vegetation.

6.2. Site Establishment Requirements

The Landowner must appoint a suitably experienced ECO prior to commencing with any development activities.

Prior to any works commencing on site the approved development footprint must be clearly demarcated. No additional working space is permitted beyond the approved development footprint. A site survey and the placement of demarcation pegs must be undertaken. Peg coding is to be communicated to the Contractor and all other relevant parties as they may be identified.

The approved disturbance area must be fenced before any construction activities may commence (refer to Appendix B). The fencing must be temporary (no cement or concrete may be used) and must comprise steel mesh fencing that is clearly visible and serves as a substantial barrier for construction workers and contractors. Fencing must be installed such that access to the development area is only possible from the existing access road. All work must be kept to the fenced disturbance footprint. No disturbance or dumping of material outside the fenced working area is permitted.

The ECO must also identify and clearly demarcate portions of the existing access road suitable for storage of construction materials and construction vehicles and machinery.

Environmental Awareness Training

All contractor teams involved in work on the development must be briefed on their obligations towards environmental controls and methodologies. The briefing should take the form of an on-site talk and demonstration by the ECO and/or Landowner. The education program should be aimed at all levels of management within the Contractor team. All environmental impacts and aspects and their mitigating measures must be discussed, explained, and communicated to employees.

The environmental awareness education program should commence with entry onto the site, prior to any construction activities taking place by each team, and is likely to be an ongoing process. All personnel must be made aware of the details of the EMPr which will be applicable to them. It must be ensured that staff members who are not proficient in the language of instruction are provided with training in a suitable alternative language. Contractor teams must also be aware of safety and emergency procedures to be followed.

A regularly updated record must be kept of all personnel attending the Environmental Awareness training sessions.

As a minimum the training must include:

- Explanation of the **reason of complying** with the EMPr;
- Discussion of the potential **environmental impacts** of construction and operation activities;
- Employees' **roles and responsibilities on site**, including emergency preparedness;
- Explanation of the **mitigation measures** that must be implemented when carrying out the activities;
- Explanation of the specifics of this **EMPr** and its specifications (no-go areas, etc.);
- Explanation of the **management structure** of individuals responsible for matters pertaining to the EMPr.
- Information on **human/wildlife conflict mitigation** specifically as it relates to baboons which are known to occur in the area. This should include the following:
    - Instructions and regular reminders to keep food and personal bags containing food items locked out of sight,
    - Education on how to react should the troop enter the area,
    - Use of designated, baboon proofed bins for food waste,
    - Instructions and regular reminders to ensure that the skips provided for building rubble are never used for food waste or garden refuse.

Environmental meetings can be held with management, and selected groups of supervisors and/or employee representatives. The meetings will aid in environmental awareness being generated at all levels, as well as assist in identifying new environmental issues, concerns, or potential pollution sources.

On the job training is an essential tool in environmental awareness. Employees will be given details of the expected environmental issues and concerns specifically related to their occupation. Employees will be trained how to respond if an environmental problem or source of environmental pollution arises. The training will be on-going, and all new employees will be provided with the same standard of training as existing employees.

6.3. Construction Phase Requirements

6.3.1. General

(a) Planning and design:

Construction activities that take place more than 1m below ground level and require excavation and use of erodible construction materials (e.g., cement, concrete, sand, gravel) must be planned to coincide with the drier months of the year (October – April) to minimize impacts to sensitive areas.

(b) Storage of Construction Materials

Stockpiles of construction material may only be stored along the existing road / disturbance footprint – suitable storage areas must be agreed on prior to construction commencement and must be managed by the ECO (or similar) in terms of best practice codes. Stockpile sites should preferably be in areas with a gentle gradient. Stockpiles should be stabilized if required. Stockpiles of erodible material must be covered by an erosion blanket (geotextile weighted with bricks).

(c) Effluent / Waste Management

Waste management during the construction phase is the responsibility of the Contractor. An on-site waste management program must be implemented that effectively controls the management and disposal of waste during construction. All waste materials are to be stored and removed from the site once construction is completed. Refuse refers to all construction debris (cement bags, rubble, timber, cans, nails, wire, spilt bitumen, glass, packaging, plastic, organic matter, etc.). Refuse generated during the execution phase of the works should be stored in secured on site bins, protected against wind dispersion, and removed on a regular basis for disposal at a permitted disposal site. The Contractor must supply adequate refuse bins on site to manage waste generated. No burning or burying of refuse on site should be allowed. Refuse bins must be watertight and windproof. No dumping of building rubble allowed.

The mixing of cement must take place on an impermeable, bunded surface. All cement effluent from mixer washings and run-off from batching areas and other work areas shall be contained in suitable sedimentation ponds. Sedimentation ponds, which must be suitably lined to prevent contamination of the ground, shall be allowed to dry on a regular basis to allow for solid material to be removed. The material must be disposed of in a suitable manner, depending on the nature of the material, and according to the discretion of the ECO.

No effluent, including harmful substances such as paint or solvents, may be discharged off the demarcated sites. Contaminated water must be collected in suitable containers and removed from site for suitable disposal.

(d) Stormwater Management and Construction Site Runoff

The Contract should take appropriate measures to control run-off from the site. A stormwater management plan including drainage measures for the construction phase and relevant method statements must be presented to the ECO for approval before the start of any works. A designated representative of the Contractor shall take responsibility for ensuring that temporary stormwater routes are maintained.

The Contractor must take suitable measures to prevent erosion resulting from a diversion, restriction or increase in flow of stormwater caused by the presence of his own works, operations, and activities to the satisfaction of the ECO. Measures must be put in place to prevent silt from entering any downstream areas.

The Contractor may need to construct a berm or similar control measures to prevent stormwater from running from excavated areas, stockpiles of waste and excavated material into adjacent areas. Any runoff collected in such bunded areas, which contain oils, fuels, chemicals, or other potentially harmful substances, must be pumped out, collected in suitable containers, and removed from site for suitable disposal.

(e) Construction Machinery

All construction machinery used must be suitable for the scale of the project at hand. No heavy machinery may be used to clear alien vegetation outside of the disturbance footprint.

Construction vehicles and machinery can be accommodated along the existing road footprint when not in active use. The locations suitable for storage of vehicles and machinery must be approved and clearly demarcated by the ECO prior to initiation of any development activities.

All construction vehicles and machinery must be maintained in a good, working condition and must be regularly inspected for possible oil / fuel leaks. Should any leaks be detected they must be repaired as soon as possible. All maintenance and refuelling of vehicles and machinery must be confined to bunded areas within the Construction Camp. Drip trays should be placed under vehicles overnight.

All mechanical equipment and work vehicles which may be kept on site are to be stored, serviced, and refueled only at designated areas within the Construction Camp. Within these areas drip trays and other impervious materials, for example plastic or metal sheeting, are to be used to prevent contamination of the ground in any way. The ECO may order the removal of equipment that is causing continual environmental damage by leaking oil or diesel for example, until such equipment has been repaired.

(f) Earth Shaping

All heavy machinery operations are to be under constant supervision and must be aware of all the environmental obligations, as they have the potential to inflict severe damage to the surrounding environment.

(g) Construction Traffic Management

All construction vehicles carrying materials must use sheeting to prevent loss of loads due to wind or rain. Movement of all construction vehicles on site is to be strictly limited to access routes approved by the ECO. Should deviation from these routes be necessary for any reason, it must be approved by the ECO.

(h) Archeology and Cultural Heritage

If any heritage remains are exposed during excavations or any other action on the site these must immediately be reported to the Provincial Heritage Resources Authority of the Western Cape. Heritage remains uncovered or disturbed during earthworks must not be further disturbed until the necessary approval has been obtained from the competent authority.

A qualified archaeologist and/or palaeontologist must be contracted where necessary (at the expense of the Landowner) to remove any heritage remains.

6.3.2. Construction Phase Fire Management Plan

Given the location of the proposed development within a fire driven ecosystem, wildfires pose a significant threat that must be suitably managed, particularly during the construction phase when numerous contractors and staff are present on site. For this reason, a detailed Construction Phase Fire Management Plan (FMP) along with emergency procedures is outlined below. The below measures are in line with the requirements of the Veld and Forest Fire Act 10 of 1998 and must be implemented throughout the entire construction phase. Upon completion of the construction phase, the Operational Phase Fire Management Plan as outlined in Section 6.4.2 will come into effect.

(a) Responsibilities

The contractor is responsible for taking the appropriate measures to guard against accidental fire, and it will be presumed that any bush fire which starts on the site, or within 100m thereof during the construction period, would be the responsibility of the developer and incur legal liability thereof.

Each Contractor involved in the project will be expected to sign for, and thus acknowledge receipt of the final EMPr, inclusive of this fire management section, and thereby will be expected to abide by the requirements outlined herein.

(b) Firebreaks

In accordance with Chapter 4 of the National Veld and Forest Fires Act 10 of 1998, firebreaks must be established along all property boundaries to prevent the potential spreading of wildfires. The firebreaks must be wide enough to have a reasonable chance of preventing fire from spreading to adjacent land. The width of the firebreak must be mutually agreed upon between adjacent landowners.

In addition, a firebreak must be developed within 15m from the development footprint to allow for a defendable space for fire-fighting purposes. This firebreak should be a maximum of 5m wide. Given the layout of the wetland features, most of the firebreaks around the approved development footprint can be cut within terrestrial vegetation on the outside of the delineated wetland features. In the case where wetland features are too broad, (South of the approved development footprint), the access roads must be maintained as firebreaks. Firebreaks cut within wetland

areas must be minimized as far as possible. The proposed approximate layout of the firebreak around the development is indicated in **Figure 3**.

All required on site firebreaks must be established in early November, prior to the fire season and monitored monthly during the fire season. Firebreaks must be kept free of flammable plants and fuels, as well as bushy and tall vegetation and trees. Firebreaks must be cut by means of handheld brush cutters to avoid soil disturbance. The cutting of fire breaks should not involve root removal but rather just the cutting of vegetation to the ground. **No burning may be used to establish fire breaks.** Material removed from the firebreaks must be removed from the site.

(c) Firefighting staff, infrastructure & equipment

General fire safety training must be provided for all staff working onsite. Capable site personnel which are often or permanently on site should receive adequate firefighting training, be aware of protocol in terms of a wildfire / incident on site and be able to lead other fire fighters. Local authority Fire Management services can also contribute during emergency situations if available.

Hand tools such as fire beaters, spades, and fire extinguishers as well as water related tools such as backpack sprayers must be kept on site, and easily accessible at all times (clearly demarcated, not locked away). In the case of any welding, grinding or other “hot work”, a fire extinguisher is to be readily available to extinguish any fire that may result from these activities. All excavation equipment should carry fire extinguishers, and all staff should be able to use them if required. Protective clothing available on site should include fire resistant trousers and shirts, flash resistant hoods, boots, gloves, goggles, and breathing masks,

(d) Fire detection and reaction strategy

Contractors will have to rely on staff, neighbors, and visitors as a fire detection system. The contractor must report fires immediately to the relevant organizations (Overstrand Municipality, Greater Overberg Fire Protection Agency, CapeNature, and all direct Neighbors). Should the contractor not be present on site, a suitable, trained individual must be assigned the responsibility of assisting in extinguishing the fire and taking the necessary steps to alert the FPA and neighboring landowners / their agents. Strategic decisions will then need to be made by the relevant identified parties on whether to leave the fire to burn depending on vegetation considerations (i.e., fire driven ecosystems), weather and threatened infrastructure.

During the fire season (December – April), the site manager must check the Fire Danger Rating daily and inform the staff, contractors, service providers, employees, and visitors to the Property. The rules and instructions pertaining to the relevant rating must be followed.

(e) Additional considerations

- No open fires may be lit anywhere on the construction site.

- The burning of refuse or vegetation material on site as a means of disposal as well as the collection of firewood or kindling from the site is prohibited.
- No smoking / cooking / heating is permitted onsite outside of the construction site.

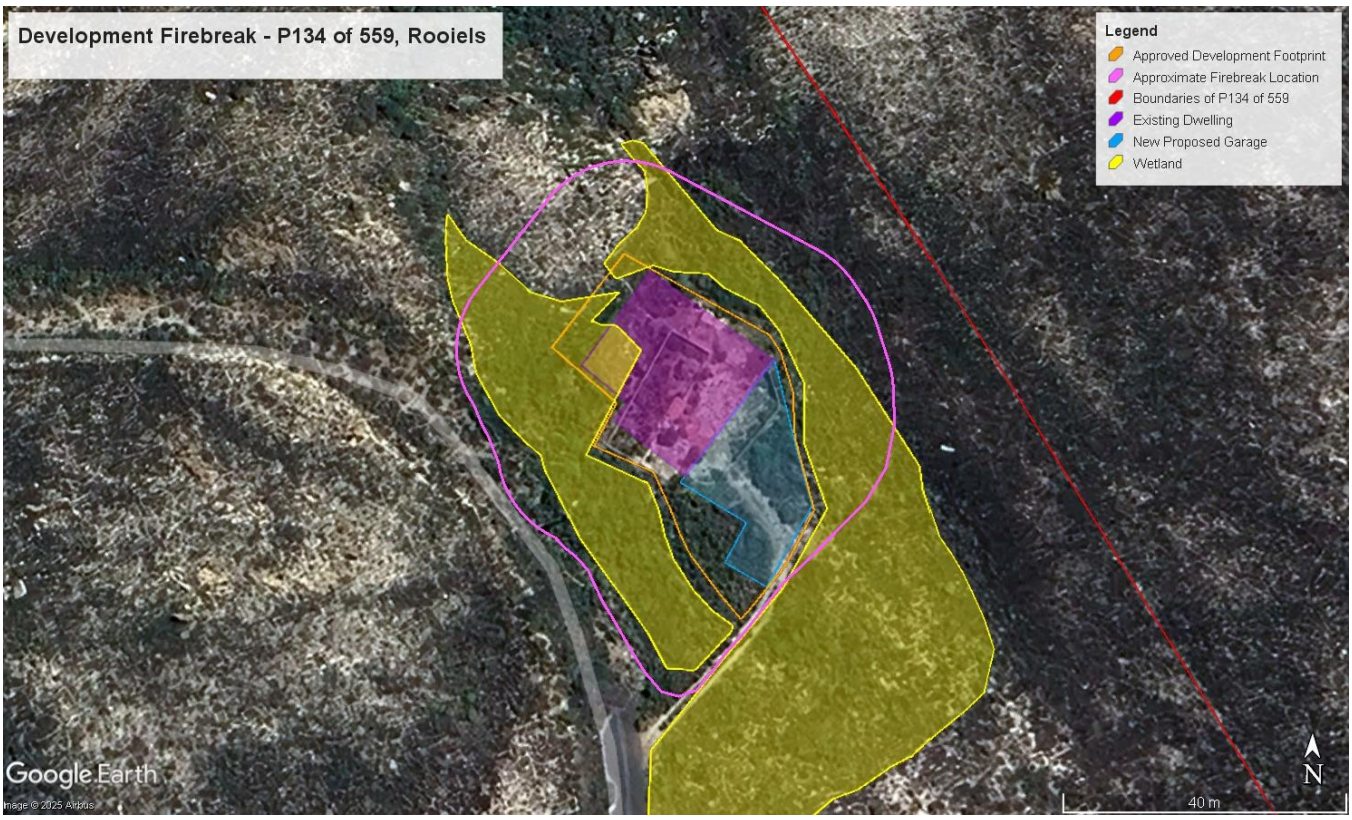


Figure 3: Approximate location of the required firebreak around the proposed development (indicated in pink). Firebreaks must also be established along all property boundaries.

6.4. Operational Phase Requirements

The Environmental Impact Assessment identified various issues and concerns that were addressed through the process. Many of the issues need to be mitigated by management procedures and therefore goals need to be set to ensure implementation of these measures. Management activities are described to achieve the objectives together with monitoring and target criteria.

6.4.1. Components of Operational Management

- Goals: The key environmental goals are set for the operation of the property.
- Objectives: These are set to meet the goals.
- Risk: If the goal is not achieved.
- Actions: Measures put in place to achieve objectives.
- Monitoring: To check if the objectives are achieved.

- Targets: Indicators of the effectiveness of the programme.
- Remedial Action: If targets aren't met.

During the lifespan of human habitation people generate waste daily. This includes food waste, packaging (paper, plastic, cardboard), glass bottles, metal cans, sewage etc. Excessive use of water and electricity is also wastage.

To minimize potential environmental impacts, the measures pointed out below should be integrated in the operation of the development daily.

(a) Water

Water for domestic use will be supplied from the existing onsite borehole. Onsite water usage will be managed according to water saving principles:

- Water abstracted from the borehole will be measured by a meter and read monthly.
- The water meter on the borehole will be maintained.
- The water reticulation system will be checked on a regular basis for leaks in pipes or taps to prevent unnecessary water losses.
- Water captured from roofs into tanks will be used for landscaping irrigation to minimise the need for abstraction from the borehole.
- Washbasin and shower taps will be fitted with flow reduction devices, aerators, and motion sensors to ensure water conservation and prevent that they can be left running;
- Toilets will be fitted with reduced flow or preferably a duel flush system;
- Water wise indigenous vegetation will be used for landscaping purposes;
- Timed irrigation systems will be implemented with the focus on the hours when the least evaporation occurs;
- Irrigation systems will be fitted with a rain sensor to prevent excessive use of water;
- Taps around the property will be fitted with locks to prevent unauthorized use and regularly maintained to detect and repairs leaks;
- Washing appliances used only when sufficiently full to warrant operation;
- Physical brushing or sweeping used in preference to water cleansing wherever possible (e.g., cleaning pathways).

(b) Electricity

Electricity supply to the development is by means of existing ESKOM infrastructure and will be supplemented by solar. The following energy saving mechanisms should be implemented:

- Energy saving bulbs in all structures, alternatively use low voltage or compact fluorescent lights;
- Use and maintain solar geysers for hot water supply to kitchen and bathrooms;
- Use proper insulation to reduce the need for air conditioning;
- Maximize the use of solar heating;
- Natural light used wherever possible during the day in preference to artificial light;

- Structures are orientated to optimize the use of ambient weather and climate conditions for heating and cooling;
- Programmed lighting used;
- Photovoltaic batteries and solar panels used;
- Low energy downward facing LED lights used for general lighting around the site.

(c) Materials

Materials used in the life cycle of the project should be focused on renewable and recyclable elements:

- Select building materials for durability to minimize maintenance or replacement;
- Use standard materials to increase the potential for re-use and re-cycling;
- Materials should be sourced locally where possible.

(d) Renovations/ building maintenance

- Water based paints used wherever possible;
- Renovations and maintenance planned to minimize the production of waste;
- Waste segregation and recycling planned prior to commencement; and
- Any waste generated is segregated to maximize re-use or recycling.

(e) Baboons

Baboons are known to occur within the natural areas surrounding the proposed development site. With baboon invasions becoming increasingly common it is important that suitable mitigation measures are put in place to prevent baboons becoming an issue at the proposed development site. Good waste management practices and the use of indigenous vegetation for landscaping is thus one of the best ways to deter baboons and ensure that their interest in residential dwellings is negated.

The following baboon mitigation measures should be implemented onsite:

- Reduce access to potential food sources by establishing a food waste disposal system:
    - Reduce food wastage as far as possible.
    - Separating organic waste into a separate container that is not accessible to baboons.
    - Baboon-proof all bins by attaching padlocks to both sides of the bins – a single padlock in the middle of the bin will not be sufficient.
    - If possible, keep all bins out of sight (e.g., in the garage).
    - Remove organic waste to the designated waste drop off point at least once a week.
- Do not plant fruit trees or vegetable gardens onsite. Rather make use of indigenous vegetation for landscaping.
- Do not have food on display where it can be seen.
- Keep all doors bolted and windows and doors locked, especially when leaving the garage or when baboons are nearby.
- Install burglar bars or window / door latches with gaps smaller than 8cm. This will allow windows and doors to be left open for fresh air but prevent baboons gaining access to the dwelling.

- Install night bolts on sliding doors to prevent baboons from lifting them off their tracks.
- Do not leave pet food outside or feed pets outside.
- Do not feed wild birds or any wild animals on the property.
- Do not install cat or dog flaps, baboons can easily gain access to the dwelling through these openings.
- Use round door handles wherever possible as baboons find these handles much more difficult to use.

6.4.2. Operational Phase Fire Management Plan

Given the location of the proposed development within a fire driven ecosystem and considering the fate of the previous onsite dwelling, which was burnt down in 2017, wildfires pose a significant risk that must be suitably managed. Legislation dictates that landowners take adequate steps to prevent or minimise the risk of unscheduled fires on their properties.

It should however also be noted that fire is essential for the health of fynbos vegetation, and it is widely accepted that it stimulates seed propagation and helps maintain high species diversity. Fire plays an important role in maintaining the ecological integrity of the natural systems within the proposed development site. As such, development at the proposed location will require stringent, site-specific management to ensure that the development is protected from potential wildfires while simultaneously ensuring that the natural fire regime is allowed to continue within the remainder of the property. For this reason, a detailed, site-specific Fire Management Plan (FMP) along with emergency procedures is outlined below. The measures below are in line with the requirements of the Veld and Forest Fire Act 10 Of 1998 and must be implemented throughout the entire operational phase of the development.

The applicant has joined the local Greater Overberg Fire Protection Association (goFPA). The goFPA action plans and procedures apply in conjunction with this FMP.

(a) Site Characteristics

Kogelberg Sandstone Fynbos covers the study area and surrounds. Kogelberg Sandstone Fynbos is a critically endangered vegetation type with an extremely high number of threatened species and is conserved within the Kogelberg Biosphere Reserve within which the development site is located. Fire cycles in the study area are still largely natural, although perhaps slightly more frequent than they would have been, due to more regular ignition by humans. The study area was last burnt in 2017 and can be expected to burn again approximately every decade. Relatively minor alien plant invasion is present onsite.

(b) Firebreaks

In accordance with Chapter 4 of the Veld and Forest Fires Act, firebreaks will be established in early November during the construction phase (Refer Section 6.3.2.). Firebreaks will be established along the property boundaries

as agreed upon between adjacent landowners as well as around the proposed development. All firebreaks must be cut annually in early November and monitored monthly during the fire season.

Boundary line firebreaks must be wide enough to have a reasonable chance of preventing fire from spreading to adjacent land. The width of the boundary line firebreak must be mutually agreed upon between adjacent landowners. The firebreak around the development should be a maximum of 5m wide and should be established within 15m of the proposed development as illustrated in **Figure 3**.

Firebreaks may not cause soil erosion and must be kept free of flammable plants and fuels, as well as bushy and tall vegetation and trees. Firebreaks should be cut and maintained with handheld brush cutters. The cutting of fire breaks should not involve root removal but rather just the cutting of vegetation to the ground. No soil disturbance may be caused during firebreak cutting. **No burning may be used to establish fire breaks.** Material removed from the firebreaks must be removed from the site.

(c) Firefighting staff, infrastructure & equipment

All site occupants and staff should receive adequate firefighting training and be aware of protocol in terms of a wildfire incident on site.

The following firefighting requirements should be implemented and met:

- All firefighting equipment must be checked and maintained annually in October before the start of the fire season.
- In accordance with Chapter 5 of the National Veld and Forest Fire Act the following minimum firefighting equipment and tools should be readily available on site (stored within a dedicated space within the proposed garage), as well as protective clothing, including the following:
    - Hand tools such as rake hoes, fire beaters, spades, long handled slashers, and fire extinguishers (available within both the garage),
    - Water related tools including backpack sprayers;
    - Spotlights, headlamps, bolt cutter, first aid kit with burn shields,
    - Protective clothing should include fire resistant trousers and shirts, flash resistant hoods, boots, gloves, goggles and breathing masks,
    - Water tanks / pumps, “BakkieSakkie” (a homemade firefighting unit, comprising of a water tank, a water pump and some fire hoses fitted on to the back of a Bakkie).

(d) Fire detection and reaction strategy

Landowners will have to rely on their staff, neighbors, and visitors as a fire detection system. The site occupant must report fires immediately to the relevant organizations (Overstrand Municipality, Greater Overberg Fire Protection Agency, CapeNature, and all direct Neighbors). Strategic decisions will then need to be made by the

relevant identified parties on whether to leave the fire to burn depending on vegetation considerations (i.e., fire driven ecosystems), weather and threatened infrastructure.

Should the landowner not be present onsite during the fire season they must ensure that there is a responsible person present on or near the property who will assist in extinguishing the fire and take reasonable steps to alert the goFPA and neighboring landowners/their agents.

The landowner should prepare and understand the Fire Reaction Strategy as per goFPA plans. Fire danger ratings should also be provided by the local goFPA to its members.

Given the high fire risk at the proposed development locality and the high financial value of the private vehicles that will be stored onsite, an evacuation plan has been outlined whereby if any fires which pose a risk to the development are detected in the vicinity of the site, all vehicles will be evacuated. This evacuation plan has been attached to the EMPr as Appendix C.

(e) Fire exclusion zones

Identified fire exclusion zones are areas where management / firefighting personnel will actively attempt to suppress the spread of fire into or towards that area. Fire Exclusion Zones will be related to the development area within the development firebreak as indicated in **Figure 3** to safeguard people and infrastructure.

(f) Alien Invasive Vegetation

Alien invasive vegetation must be removed from the development site on an ongoing basis as outlined in Section 6.5 (n). All cut vegetation and litter resulting from clearing activities must be removed from the site.

(g) Design Considerations

Landscaping can be an effective tool to mitigate fire risks. The fuel load around the development must be minimized by ensuring that suitable vegetation is used for all landscaping activities. The following should be implemented:

- Only indigenous species may be used for landscaping purposes.
- Where possible fire-resistant, fleshy-leaved plants should be selected for landscaping purposes.
- During the fire season healthy, green, groundcover must be maintained around the development.
- Avoid the use of plants that develop deciduous bark, dead leaves / branches, or dead undergrowth.
- Ensure that no fuel material is allowed to build up on site.
- Remove any dead leaves, branches etc. from the site.
- Maintain all gutters free of leaf litter.
- Keep any fine vegetation trimmed.

(h) Additional Considerations

- Site occupants must take all reasonable precautions to prevent the occurrence of human induced wildfires.

- No open fires are permitted unless in designated fireplaces.
- No fires may be lit once the Minister has published a warning of a high fire danger (legal punishable offence).
- A lit fire may under no circumstances be left unattended (legally punishable offence).
- Hot coals should not be left unattended.
- Stockpiles of wood are not permitted onsite.
- Defense measures, such as sprinklers or drencher systems should be installed within and/or around all buildings.

6.4.3. Overall Goals and Management Objectives

Five goals were set to ensure minimal environmental impact during the operation and life cycle of the project:

1. Maintain the aesthetic appeal of the site.
2. Manage and minimize onsite waste.
3. Conserve water and prevent pollution.
4. Manage the access road.
5. Implement suitable fire risk management.

Goal 1: Maintain the aesthetic appeal of the site					
Objective	**Risk**	**Actions**	**Monitoring**	**Targets**	**Remedial Action**
To ensure longevity of measures put in place during the design and construction phase. This will include maintenance of the development during operation.	• Inappropriate landscaping • Decrease in aesthetic appeal. • Poor maintenance of infrastructure and road areas	• Use of endemic, water-wise plants • No naked light sources should be visible from outside the property, only reflected light to be visible. • Low energy downward facing LED lights used for general lighting around the site. • Ensure solar panels are angled such that they result in minimal light reflection. ***Responsibility: Owner***	• Monitor that the landscaper is complying with the contract. • Monitor the placement of aerials or air-conditioning units in terms of visual intrusion. • Monitor the effect of lights from the buildings. • Monitor the effect of solar panel location. ***Responsibility: Owner***	• Adherence of operator/owner/landscaper to the guidelines • All infrastructure to be in acceptable maintained condition. ***Responsibility: Owner***	• Owner to take immediate action against non-compliance. • Deviation from job description must be dealt with in terms of contractual or employment terms of reference. ***Responsibility: Owner***

Goal 2: Manage and minimize onsite waste.					
Objective	**Risk**	**Actions**	**Monitoring**	**Targets**	**Remedial Action**
To minimise and manage general and recyclable waste on site	• Non-effective waste management • Visual and environmental impact from windblown waste. • Odour and pests from waste left on site	• Reduce waste produced. • Minimise use of resources • Educate users on recycling and resource saving initiatives. • Ensure correct disposal to landfill. ***Responsibility: ECO/ Owner***	• Check operational components of recycling is followed. • Monitor waste removal to landfill – proof of correct disposal ***Responsibility: ECO/ Owner***	• Recycling to be actively implemented. • No on-site waste disposal site • Frequent removal of waste • No burning of waste on site ***Responsibility: ECO/ Owner***	• Refer non - compliance to the landowner and/or site manager. ***Responsibility: ECO/ Owner***
Manage garden and property grounds waste	• Irresponsible waste management • Unsightly and smell • Attraction of pests	• No burning/burying of waste on the property. • No dumping on property verges • All garden waste/ organic waste removed to composting site. • Waste removal from site to the municipal site ***Responsibility: ECO/Owner***	• Monitor for any litter on a weekly basis. ***Responsibility: ECO/Owner***	• No waste or pollution incidents may occur. ***Responsibility: ECO/Owner***	• Any non-compliance to be referred to landowner and/or site manager. ***Responsibility: ECO/Owner***

Goal 3: Conserve water and prevent pollution					
Objective	**Risk**	**Actions**	**Monitoring**	**Targets**	**Remedial Action**
Responsible and sustainable water use on site	• Water wastage • Pollution of stormwater on site	• Water wise gardening • Lock taps • Use duel-flush toilets. • Water awareness programme with guests • Sewage system monitored and working efficiently. • Any pollution sources to be addressed. • Water measured by a meter and read monthly. • The water meter maintained. • The water reticulation system will be checked on a regular basis for leaks. • Water captured from roofs into tanks will be used for landscaping irrigation to minimise the need for abstraction from the borehole. ***Responsibility: Owner***	• Check water usage on site. • Educate occupants on site re water wise management. • Check conservancy tank for leaks on annual basis. • Maintain meter for borehole pump and monitor usage. ***Responsibility: Owner***	• Water use targets to be set according to water availability. • No sewage leakage ***Responsibility: Owner***	• Water leaks, non-compliance to be reported to owner. • Increase awareness programme. • Fix leaks or replace with new system components. ***Responsibility: Owner***
Prevent pollution from fuel / oil leaks or spills.	• Hydrocarbons in runoff from garage	• Refuelling, oil replacement and vehicle maintenance must take place offsite as far as possible, alternatively	• All vehicles should be regularly monitored for oil or fuel leaks.	• No water pollution incidents may occur.	• Any non-compliance to be referred to owner.

		this must be confined to a designated, bunded area within the garage. Oil traps must be installed within this area. • Any leaks/ spills should be cleaned and repaired immediately. • Oil traps must be included in the garage stormwater system. • Spill kit to be kept on site. ***Responsibility: Owner***	• Old traps should be monitored on a every second month to ensure integrity. ***Responsibility: Owner***	***Responsibility: Owner***	***Responsibility: Owner***

Goal 4: Manage access road					
Objective	**Risk**	**Actions**	**Monitoring**	**Targets**	**Remedial Action**
To minimise/ avoid erosion on access road.	• Too many vehicles using road system. • Badly eroded road will lead to new tracks/ damage to vehicles	• Minimise speed. • Limit vehicle numbers • Maintenance programme for road ***Responsibility: Owner***	• Check road conditions on a regular basis. ***Responsibility: Owner***	• Limited erosion • Limited road deterioration ***Responsibility: Owner***	• Refer non - compliance to the owner and site operator/manager. ***Responsibility: Owner***

Goal 5: Implement suitable fire risk management					
Objective	**Risk**	**Actions**	**Monitoring**	**Targets**	**Remedial Action**
To protect the development form wildfire while allowing the natural fire regime to continue in the surrounding area. To ensure that no wildfires start on the proposed development site and spread to adjacent properties.	• Loss of infrastructure • Loss of biota • Loss of ecosystem functioning	• Join the Greater Overberg Fire Protection Association. • Ensure all alien invasive plants are removed from the site on an ongoing basis. • Plant indigenous fire-resistant, fleshy leaved plants around the development footprint. • Ensure that suitable, functional, firefighting equipment is readily available onsite. • Cut a fire break along all property boundaries as well as within 15m of the development annually early in November. • Handheld brush cutters must be used to develop firebreaks and no soil may be disturbed. ***Responsibility: Owner***	• All firefighting equipment must be checked and maintained annually in October, before the start of the fire season. • The fire break must be monitored monthly during the fire season and any potential hazardous biomass removed. ***Responsibility: Owner***	• Limit the fuel load onsite by removing all alien invasive plants. • Create a fire barrier around the proposed development by planting suitable vegetation. • Well maintained fire break. ***Responsibility: Owner***	• Refer non - compliance to the ECO. • Should a fire occur onsite, firefighting efforts must be mobilised immediately, relevant authorities and adjacent landowners must be notified. ***Responsibility: Owner***

6.5. General Management Requirements

The following items must be integrated into the management of the activity whenever relevant:

a) Contractual communication procedures on site

One book will be kept on site for the purpose of recording on-site instructions and as a general record of environmental issues. The diary must be kept for a minimum of two years after the activity is completed for the relevant authority to review if deemed necessary. A photographic record of before and after construction will be kept for visual reference purposes. The book will consist of two sections:

a) **Environmental Site Instruction Section** will be used for the recording of general site instructions relating to the protection of environmentally sensitive or potentially impacted areas or features on the site, by the ECO, to facilitate the issuing of the site instruction by the Owner.

b) **Site Diary Section** will be used to record the comments of the ECO as they relate to activities on the site, any problems encountered, or comments or complaints received from the public about works from the site.

This book is to always remain on site and is to be made available for monitoring purposes by the local authority as required.

b) Communication/Contractual Network

There is to be continual communication between the Landowner, Contractor / Site Manager, and the ECO. The ECO will advise the Landowner on factors relating to the EMPr and all environmental matters on site. The ECO is empowered to order the Contractor to immediately cease any activities or operations that are required to be stopped as a matter of urgency to prevent serious adverse environmental impacts or potential impacts on the site or any of the adjacent properties or areas outside the boundaries of the site. The ECO shall without delay report any such actions to the Landowner. The suspension will be enforced until corrective action has been taken, with no extension of time for such delays. In such a case, all costs are to be borne by the Contractor.

c) Programming of Construction Events

The ECO must be supplied with a detailed program of all construction events to allow for proper monitoring on site. Any amendments to the program of construction events for any reason must be forwarded to the ECO.

d) The watercourses and sensitive features

The development footprint may only be accessed via the existing access road. This road may not be extended or expanded. No alternative access routes may be utilized. The approved disturbance footprint must be clearly fenced as outlined in Section 6.2 of this document. All areas outside the exiting access road and fenced off approved

disturbance footprint are to be regarded as “no-go” zones as indicated in Appendix B. No one is permitted to enter no-go zones. No materials, rubble or equipment is to be stored or stockpiled outside the approved disturbance area or suitable storage locations identified by the ECO along the access road. Any deviations from these specifications are subject to the approval of the ECO.

All wild animals, including reptiles, amphibians and birds may not be harmed. The ECO must be notified if any fauna needs to be removed and relocated from the construction site. Training will include not killing birds, snakes, or other potentially dangerous fauna. A suitable relocation site will have to be identified.

e) Noise Impacts

The contractor must take appropriate measures to limit the impact of unreasonable noise from construction activities. Appropriate measures should include holding discussions with affected parties to determine if there are times of the day when noise is less likely to be a problem and restricting working hours as far as reasonably practical. Construction activities to be limited to working hours weekdays (07:00 – 19:00) and half day Saturdays (08:00 – 13:00). No work may be undertaken on Sundays and on public holidays. All construction vehicles and machinery should be maintained in good working condition and additional noise screening mechanisms also included in the design.

f) Cleanliness of Roads

The Contractor must ensure that construction vehicles do not spill or drop any construction materials (sand, cement, debris, etc) onto public or private roads. If this should occur, it is the responsibility of the Contractor to ensure that the roads are suitably cleaned.

g) Erosion Control

Care must be taken to prevent erosion of soils on the construction site. Should any erosion be detected on site, the ECO or Site Manager must identify the cause of such erosion and ensure that the most appropriate method of mitigation or stabilisation is employed as soon as possible.

Runoff generated during construction should not cause any damage and should be controlled or contained during periods of high rainfall.

h) Emission Control

Emission control in vehicles will be reduced by implementing the following:

- All diesel vehicles must be maintained / serviced to minimise unnecessary exhaust emissions;
- Vehicles with smoking exhausts must be repaired immediately;

- Speed limits must be adhered to; and,
- Vehicles and other diesel driven machinery must be switched off when not in use.

i) Topsoil Removal and Stockpiling

Where topsoil is to be removed from the work areas, it should be stockpiled separately from subsoil and must be suitably covered and / or stabilised within a day of stockpiling. Topsoil stockpile not to exceed 1.5m height.

Stockpiles should be convex at the top to promote run- off, so that water is not able to accumulate and result in leaching of nutrients from the soil.

Topsoil can be utilized for rehabilitation and landscaping purposes. Once in place, topsoil must be suitably covered and / or stabilised within a day of placement.

j) Dust Control

The contractor shall take appropriate measures, to the satisfaction of the ECO to minimise the generation of dust and mud on the site, by supplying suitable stabilisation (such as mulch or straw stabilisation) for all cleared ground.

Watering of exposed working areas may be considered for the control of dust during windy conditions, although great care must be taken that this does not result in excessive run-off, and erosive action.

k) Trenching and Service Installation

To minimize trenching, where new service installation is required, these are to be installed above ground within the disturbance footprint of the existing access road. Where unavoidable, the excavation of trenches for service installation should be undertaken in a phased manner where possible, to allow for trenches to stand open for a maximum of three days only. Materials removed from trenches must be stockpiled in a suitable position and should be stabilised if backfilling is not expected to occur within the following two days.

Service installation should be coordinated to prevent the undue reopening of trenches for the installation of additional services. Since most of the service infrastructure is already in place on the property, service installation and trenching is expected to be minimal.

l) Emergency

All accidents and emergency situations are to be reported to the ECO **and** Site Manager, and full details included in the monthly environmental report. Emergency contact numbers for the fire department to be kept on site.

Fire:

In the case of a fire occurring on site, the ECO and safety steward are to be notified immediately. If localised, effort should be made to extinguish the fire immediately, and if required, the assistance of the local fire department should be sought by the safety steward.

First Aid:

The Contractor must provide and maintain a suitable first aid kit on site, with a member of staff suitable qualified in first aid on site during working hours, in accordance with the Occupational Health and Safety Act.

m) Public Complaints

All public complaints received are to be registered by the ECO or Site Manager and addressed immediately. Public complaints and responses are to be recorded and included in the monthly environmental report by the ECO.

n) Vegetation Management

Alien invasive vegetation is imported / non-indigenous plant material that can out-compete indigenous vegetation and must be removed from the site on an ongoing basis to conserve indigenous vegetation. Furthermore, alien invasive vegetation poses a fire risk as it increases the fuel load and fire intensity and may result in frequent and intense fires.

All alien invasive vegetation present on site must be removed as soon as possible and again within 2 years of any development. Clearing must take place by means of a systematic phased approach in which the least infested areas are cleared first. Removal of alien vegetation can be undertaken using various methods - these include mechanical (cutting, chopping, pulling, ring barking), chemical (poisoning) or biological (bugs, beetles). Each species reacts differently and thus often requires specific actions or a combination of actions to effectively remove.

The important thing is to first identify the species of plant and then to implement an effective removal plan. Most species require on-going management, i.e., initial clearing then several follow up clearings of juvenile plants. Frequent follow up must be prioritized to facilitate effective clearing.

Depending on the species of alien invasives that are cleared from the property and the method of clearing implemented, herbicide use may be required to prevent resprouting. Should herbicide use be required, a method statement detailing the species to be removed, method to be used, herbicides required, and application method must be submitted to the ECO for approval. No herbicide use is permitted onsite without an ECO approved method statement.

o) The construction camp / laydown area:

There will be one Construction Camp for use by all contractors and subcontractors, for the provision of staff facilities as well as the storage of materials and equipment. The most suitable location for the camp has been determined (refer Figure 4 and Appendix A) and is located within the approved development footprint. No overnighting is permitted at the construction camp unless authorised by landowner and in consultation with adjacent landowners. No poaching / hunting may be undertaken by construction staff.

Figure 4: Location of construction camp within the approved development footprint (indicated by orange outline)

The Contractor should ensure that ablutions are restricted to the sanitary facilities only. Where chemical toilets are provided, the Contractor should ensure that they are kept in a hygienic condition and emptied on a regular basis.

Care must be taken that no spillage occurs when chemical toilets are cleaned, and their contents are properly stored and removed off site. A contingency plan for spills must be supplied by the contractor and approved by the ECO. Toilets should be located where their use would result in minimal impact on the environment and may not be in areas of running or standing water during winter and must be secured to prevent them from blowing over.

All building materials are to be prepared at a dedicated batching / contractor's area identified by the Site Manager and approved by the ECO, or within the Contractor's Camp, to enable the effects of cement and other substances, and the resulting effluent and building waste to be more easily managed.

Fuels and hazardous materials

Fuels and flammable materials are to be stored in suitably equipped storage areas, inside the Contractor's Camp. These areas shall comply with general fire safety requirements. Impervious materials are to be used in these storage areas to prevent contamination of the ground in the event of spillages or leaks. Quantities of fuels and hazardous materials stored on site should be appropriate to the requirement for these substances on site. The responsible management of hazardous chemicals should be practiced, and no storage or handling of chemicals must take place within or within close proximity to the onsite watercourses.

Bulk fuel depots are to be placed within hardened bund areas; bunds are to have a holding capacity equal to 110% of the largest fuel container. The Contractor is to ensure that he is aware of the effects of all substances on staff and the environment, and the correct action to take in the case of any incident involving these materials, according to the MSDS.

p) Rehabilitation after construction

The Landowner and Contractor must ensure that all areas are cleaned up and rehabilitated after completion of construction activities.

That includes the following actions:

- Removal of excess building materials from construction sites;
- Removal of and correct disposal of all stockpiles (excess building material, soil resulting from excavation activities)
- Removal of all protective fencing around the disturbance footprint;
- Removal of all temporary toilet facilities,
- Removal of all temporary signage and re-routing equipment,
- Any materials and waste from construction camps,
- Removal and correct disposal of all alien vegetation removed,
- Removal of vehicles from site,
- Rehabilitation of any terrestrial and aquatic areas (reshaping and vegetation) affected by construction activities.

6.6. Onsite Conservation

The proposed development site is located within the Kogelberg Biosphere Reserve and borders the Kogelberg Nature Reserve to the northeast. The site is thus also located within the protected area buffer zone. Wetland and good quality critically endangered vegetation is present on site, and, given the location of the site, it serves as a transitional zone between the Kogelberg Nature Reserve and the coastline. Furthermore, the proposed development site is located within the Boland SWSA for surface water. The above-mentioned aspects highlight the high conservation value of the site.

Given the pristine natural setting of the proposed development site, the owner aims to conserve most of the site in its natural state thereby maintaining the scenic beauty and ecological functionality of the land area. To this end the following conservation actions will be implemented onsite:

- Alien species will be managed and cleared from the site on an ongoing basis throughout the duration of the operational phase.
- The disturbed area adjacent to the existing dam will be rehabilitated by means of alien invasive clearing, removal of unnatural fill material and the re-establishment of natural vegetation by means of input from the Kogelberg Biosphere Reserve Botanical Society.
- The wetlands surrounding the proposed development footprint will be rehabilitated after completion of construction and will be maintained in a healthy ecological state.
- The site will be regularly monitored for signs of erosion. Should erosion be noted it will be suitably addressed.
- Suitable fire management will be implemented as outlined in Section 6.3.2 and Section 6.4.2 of this document. Given that the proposed development site is located within a fire driven ecosystem that requires regular burns to remain in a healthy ecological state, integrated fire management will be implemented through the development of an integrated fire management plan. Site management will also comply with the National Veld and Forest Fire Act, 1998 (Act No. 101 of 1998).

6.7. Method Statements

For any activity the Contractor is requested to submit a method statement (MS) for comment by the ECO. The method statement must provide a step-by-step plan (which may include a schematic diagram etc.) to inform the responsible person(s) on the process and actions to take in a sequential and logical manner, which aims to reduce the impact of undertaking the activity within a reasonable timeframe and cost.

The format should clearly indicate the following:

What - a brief description of the work to be undertaken;

How - a detailed description of the process of work, methods and materials;

Where - a description/sketch map of the locality of work; and

When - the sequencing of actions with due commencement dates and completion date estimates.

The Contractor must submit the method statement to the ECO prior to the start of any construction activity. Work may not commence until the comments of the ECO have been received and taken into consideration, and the ECO has approved the method statement for implementation on site.

SECTION 7: MONITORING AND COMPLIANCE

7.1. Monitoring

The monitoring of works on site is necessary to demonstrate compliance with the specifications of the EMPr and to allow for problems or issues of non-conformance to be identified and appropriate corrective measures to minimize environmental damage to be implemented.

Monitoring should include daily visual checks by the Site Manager, checks on particular requirements for site activities by the ECO, as well as a review of site documentation. Monitoring should include photographic records as outlined in section 7.5 of this document. The ECO shall complete the performance record at the end of each table in section 7.2 of this document, as a record of transgressions or problems experienced on site, and how they were dealt with. Monitoring of activities on site by the ECO should be done daily during ground-breaking activities and weekly thereafter and environmental audits should be conducted 6 months into construction and again upon completion of the development. During the construction phase(s), monthly ECO reports should be generated to inform the necessary external Audits that may be specified in terms of the EA. Construction phase monthly ECO reports should also be submitted to the Overstrand Environmental Management Section and CapeNature to monitor compliance of the approved EMPr.

Following completion of construction, the site must be assessed by the freshwater ecologist and where necessary, measures must be outlined to rehabilitate disturbed wetland areas, including where necessary requirements for manual or machine re-shaping, manual ripping of compacted areas, and replanting of disturbed zones. Implementation of these measures must be overseen by the ECO in collaboration with the freshwater ecologist.

A five yearly audit of the site should be undertaken by a wetland ecologist (ideally from CapeNature otherwise another independent specialist funded by the landowner) to ensure that the conditions of development authorization are being implemented.

7.2. Environmental Control Sheets

7.2.1 Communications

TASK	MITIGATION AND ENVIRONMENTAL CONTROLS	ACTION
Site Diary and Site Instruction Book	• To be updated on a regular basis	ECO/Site Manager
Public complaints	• To be recorded, along with records of responses to them in the Site Diary	ECO/Site Manager
Environmental Awareness education	• Each contractor team to attend a training session prior to commencing work on site. • Record of members attending training sessions to be kept and updated regularly.	ECO
Method Statements	• Method statements to indicate What, How, Where and When activities are to take place. • Method statements for each relevant activity to be submitted to ECO prior to the start of that activity on site. • Work is not to commence until method statement approved by ECO and Site Manager if necessary.	Contractor

COMMENTS/ UPDATE

RECORD OF PERFORMANCE

Acceptable		Details of Transgression	Responsible Party	Action Taken	Date
Yes	No				

7.2.2 Site Preparation

TASK	MITIGATION AND ENVIRONMENTAL CONTROLS	ACTION
Site definition	• Site survey to be undertaken, and site demarcated with steel mesh fencing prior to any other works on site if required.	Surveyor
Fencing of sensitive features	• The approved disturbance area should be fenced off prior to construction. • Fencing to be as per specifications of section 6.1 • All excess fencing material to be removed from site or stored in the Contractor's Camp. • Fencing must remain in place for the duration of the works on site. • If damaged, fencing is to be repaired or replaced immediately. • No dumping or stockpiling of any materials is allowed outside the fenced disturbance or designated storage areas.	ECO/ Contractor Contractor
Topsoil removal	• Topsoil to be removed from all work areas and stockpiled separately from subsoil. • Stockpiles should be suitably shaped to prevent leaching of nutrients, and stabilised.	Contractor

COMMENTS/ UPDATE					
RECORD OF PERFORMANCE					
Acceptable		**Details of Transgression**	**Responsible Party**	**Action Taken**	**Date**
Yes	**No**				

7.2.3 Site Procedures

TASK	MITIGATION AND ENVIRONMENTAL CONTROLS	ACTION
Contractor's Camp location	• Contractor's Camp is located at the most suitable site as identified by the ECO and Site Manager.	Contractor
Toilet facilities	• Suitable chemical toilet facilities to be provided for all staff. • Toilets are to be kept in a hygienic condition and emptied regularly.	Contractor
Working hours	• To be limited to between 07h00 and 19h00 on weekdays, and 08h00 and 13h00 on Saturdays.	Contractor
Cleanliness of public roads	• Construction materials spilled on private or public roads cleaned up.	Contractor
Fire control	• Required firefighting equipment is available on site, and in working order. • No open fires are lit on site without approval of the ECO and Site Manager.	Contractor
Material handling and storage	• Fuels and hazardous materials to be stored in suitably equipped storage areas in the Contractor's camp. • These areas shall comply with fire safety requirements. • Impervious materials are to be used to prevent contamination of the ground in the event of spillages or leaks.	Contractor
Stockpiles	• Sites for stockpiling must be identified by the ECO and marked on a plan. • Stockpiles must be suitably stabilised where necessary.	Contractor
Waste management	• All waste to be stored in an appropriate area on site and protected against wind dispersal. • Waste to be removed on a regular basis for disposal at a permitted disposal site. • No burning or burying of refuse on site is allowed.	Contractor
Discharge of construction water	• All runoff from batching plants, work areas and mixer washings to be contained in sedimentation ponds, which are suitably lined. • Ponds must be allowed to dry out regularly, and solid waste removed and disposed of at a site approved by the local authority.	Contractor
Maintenance of equipment	• All mechanical equipment and work vehicles to be stored, serviced, and refuelled at designated areas in the contractor's camp.	Contractor

Stormwater management	• Drip trays or impervious materials to be used to prevent contamination of ground. • Suitable measures must be in place to prevent erosion resulting from diversion, restriction or increase in stormwater runoff – refer to the Concept Stormwater Runoff Plan (Appendix D to this EMPr) • Measures must be taken to prevent stormwater from flowing from excavated areas. • Stormwater containing harmful substances are contained and removed from site. • Stormwater channels are to be kept clear from soil and debris. • Erosion or stormwater damage resulting from Contractor's operations to be suitably repaired.	Contractor
Erosion control	• Suitable stabilisation measures are to be implemented wherever works are taking place. • Where erosion is detected, suitable mitigation methods are to be employed as soon as possible.	Contractor
Dust control	• All cleared ground is to be suitably stabilised to prevent dust. • If ground is watered to prevent dust, care must be taken that runoff is not excessive, or erosive.	Contractor
Construction traffic management	• All construction vehicles carrying materials must use sheeting to prevent loss of loads due to wind or rain. • Movement of construction vehicles must be limited to approved haul and access routes.	Contractor
Site rehabilitation	• All structures, equipment materials and facilities are to be removed from site on completion of the project. • Construction site shall be cleared and cleaned to the ECO's satisfaction	Contractor

COMMENTS/ UPDATE

RECORD OF PERFORMANCE

Acceptable		**Details of Transgression**	**Responsible Party**	**Action Taken**	**Date**
Yes	**No**				

7.2.4 Construction Activities

TASK	MITIGATION AND ENVIRONMENTAL CONTROLS	ACTION
Preparation of building materials	• Preparation of materials to be limited to a batching plant, or the Contractor's Camp.	Contractor
Earth shaping	• Works to be restricted to within surveyed boundaries of the site. • Bulldozer/ heavy machinery operators to be under constant supervision. • Use and excessive movement of heavy machinery to be avoided in areas of environmental sensitivity or high erosion potential.	Contractor
Excavation of trenches for service installation	• Trenching to be undertaken in a phased manner. • Trenches to stand open a maximum of 3 days for installation of services.	Contractor
Dewatering of trenches if flooded.	• Water to be pumped to sedimentation ponds, not allowed to flow into adjacent land.	Contractor
Backfilling of trenches	• To be undertaken in a phased manner as services are installed. • Fill material to be replaced in same work area from which it originated as far as possible. • Fill material to be compacted to its approximate original density.	Contractor
Temporary stabilisation	• All areas in which services have been installed are to be stabilised as soon as possible after backfilling. • Monthly maintenance checks to be carried out and remedial action implemented where necessary.	Contractor

COMMENTS/ UPDATE

RECORD OF PERFORMANCE

Acceptable		Details of Transgression	Responsible Party	Action Taken	Date
Yes	No				

7.3. Review of the EMPr

The EMPr will be reviewed by the ECO on an ongoing basis. Should any changes be required, the competent authority must be consulted to determine the appropriate process to be followed

7.4. Environmental Audits

A suitably qualified Environmental Auditor is to be appointed, at the expense of the Landowner, to undertake audits of compliance with the EMPr.

Objectives should be to audit compliances with the key components of the EMPr, to identify main areas requiring attention and recommend priority actions. The audit should cover a cross section of issues, including implementation of environmental controls, environmental management, and environmental monitoring.

Results of the audits should inform changes required to the specifications of the EMPr or additional specifications to deal with any environmental issues which arise on site and have not been dealt with in the current document.

Environmental audits should be conducted 6 months into construction and again upon completion of the development.

A five yearly audit of the site should be undertaken by a wetland ecologist (ideally from Cape Nature otherwise another independent specialist funded by the landowner) to ensure that the conditions of development authorization are being implemented.

7.5. Record keeping

The Landowner should keep records of the following:

- Monitoring Reports (ECO reports),
- Complaints received and responses made,
- Audit reports and reviews of the EMPr,
- Amendments to the EMPr, EA or GA.

Records should be kept and must be made available for review on request, based on adequate motivation. Minutes of meetings on site must reflect environmental queries, complaints, actions agreed upon, dates of eventual compliance and must form part of the official environmental site record.

In addition to the summary report, the ECO shall keep a monthly photographic record of issues on site and an ad hoc record of incidents or events on site, especially in the case of transgressions from EMPr specifications. Such photographs are to be taken with an in-camera dating facility.

During the construction phase, monthly ECO reports must be drafted and summitted to the Overstrand Environmental Management Section and CapeNature to monitor compliance of the approved EMPr.

7.6. Incident reporting

Environmental incident reporting is a vital part of communication. Employees are required to report all environmentally related problems, incidents, and pollution, so that the appropriate mitigation actions can be implemented timeously.

The Landowner shall investigate the incident and record the following information:

- How the incident happened;
- The reasons the incident happened;
- How rehabilitation or clean up needs to take place;
- The nature of the impact that occurred;
- The type of work, process or equipment involved; and
- Recommendations to avoid future such incidents and/or occurrences.
- Shall inform the ECO of all incidents that were reported.
- Shall consult with the ECO for recommendations on actions to be taken or implemented where appropriate (e.g., clean-ups).

SECTION 8: TRANSGRESSIONS IN TERMS OF EMPr

The Landowner must comply with the requirements of this EMPr, the EA and GA on an on-going basis and any failure on his part to do so will entitle the relevant competent authorities to **take corrective action against the transgressor**.

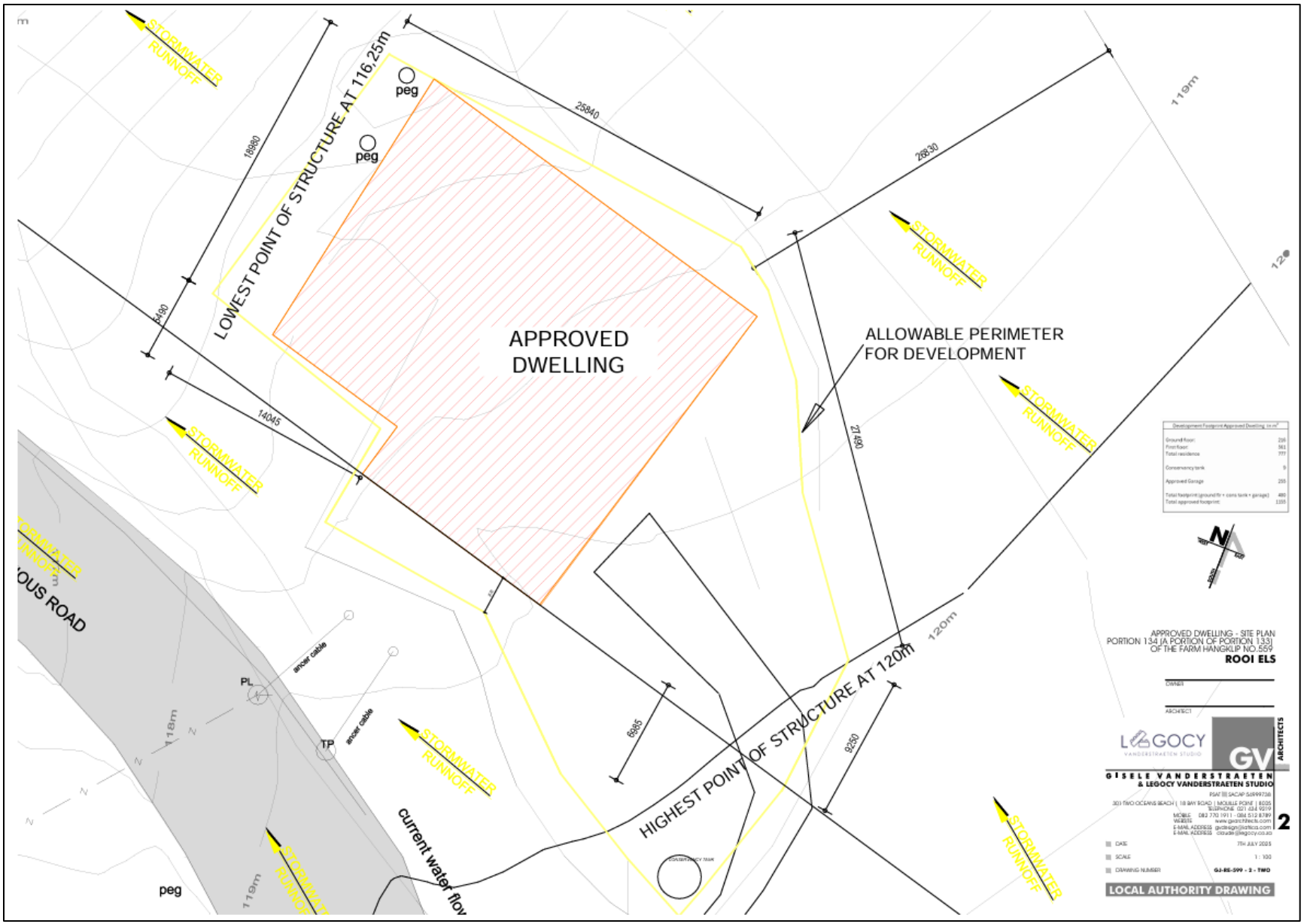
If any activities are undertaken outside the scope of the adopted EMPr, GA and/or EA requirements, in terms of the action outlined within the given method statement, the responsible person(s) will be subject to Section 24(F) of NEMA, and that appropriate enforcement and compliance requirements will follow by the competent authority.

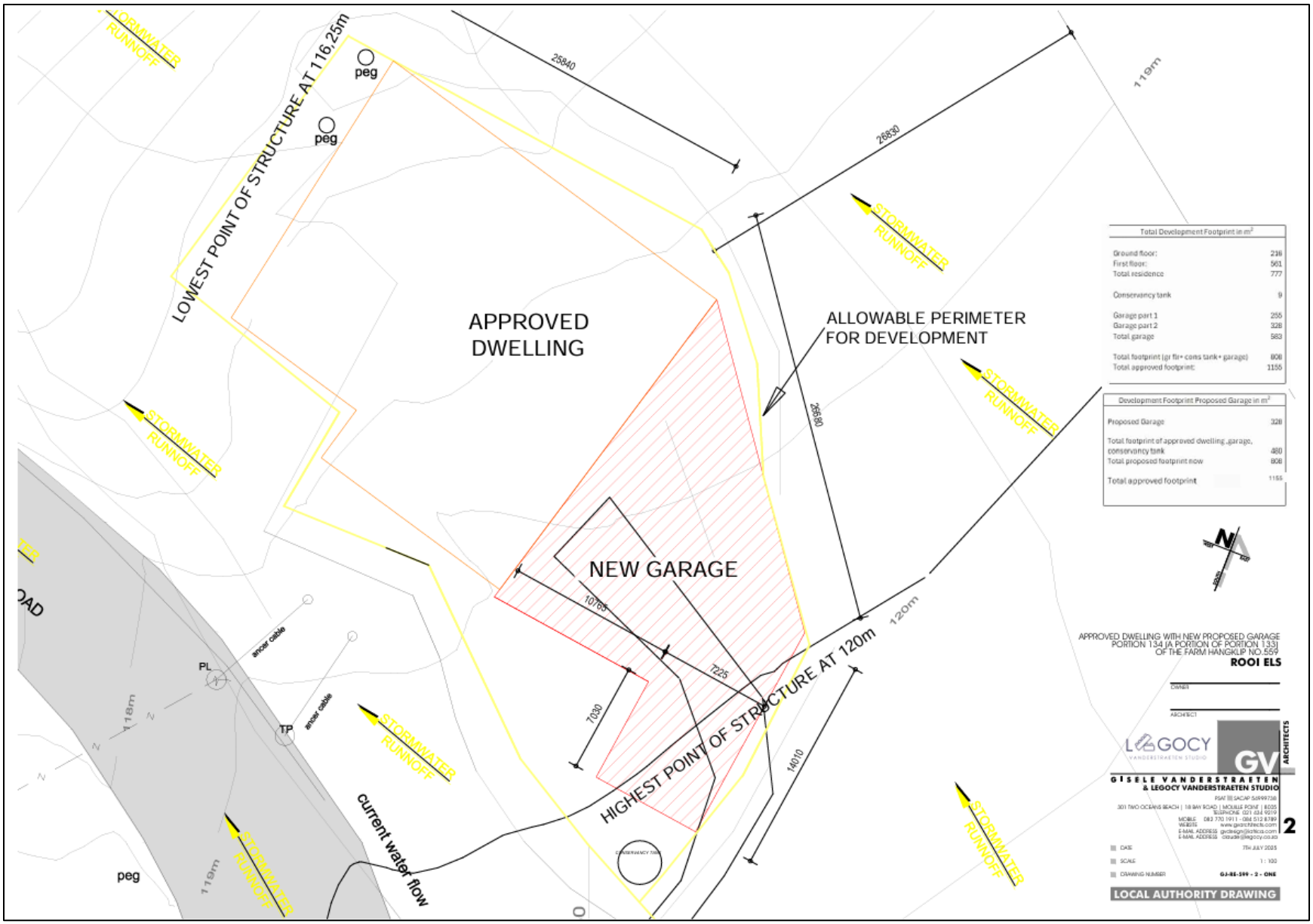
Transgressions relate to actions by the Landowner, Contractor, or contractor team members whereby damage or harm is inflicted upon the environment or any feature thereof and where any of the conditions or specifications of the EMPr/ EA/ GA are infringed upon.

In the instance of environmental damage, the damage is, where possible, repaired and rehabilitated using appropriate measures, as specified, and undertaken by appropriate specialists, for the account of the responsible party.

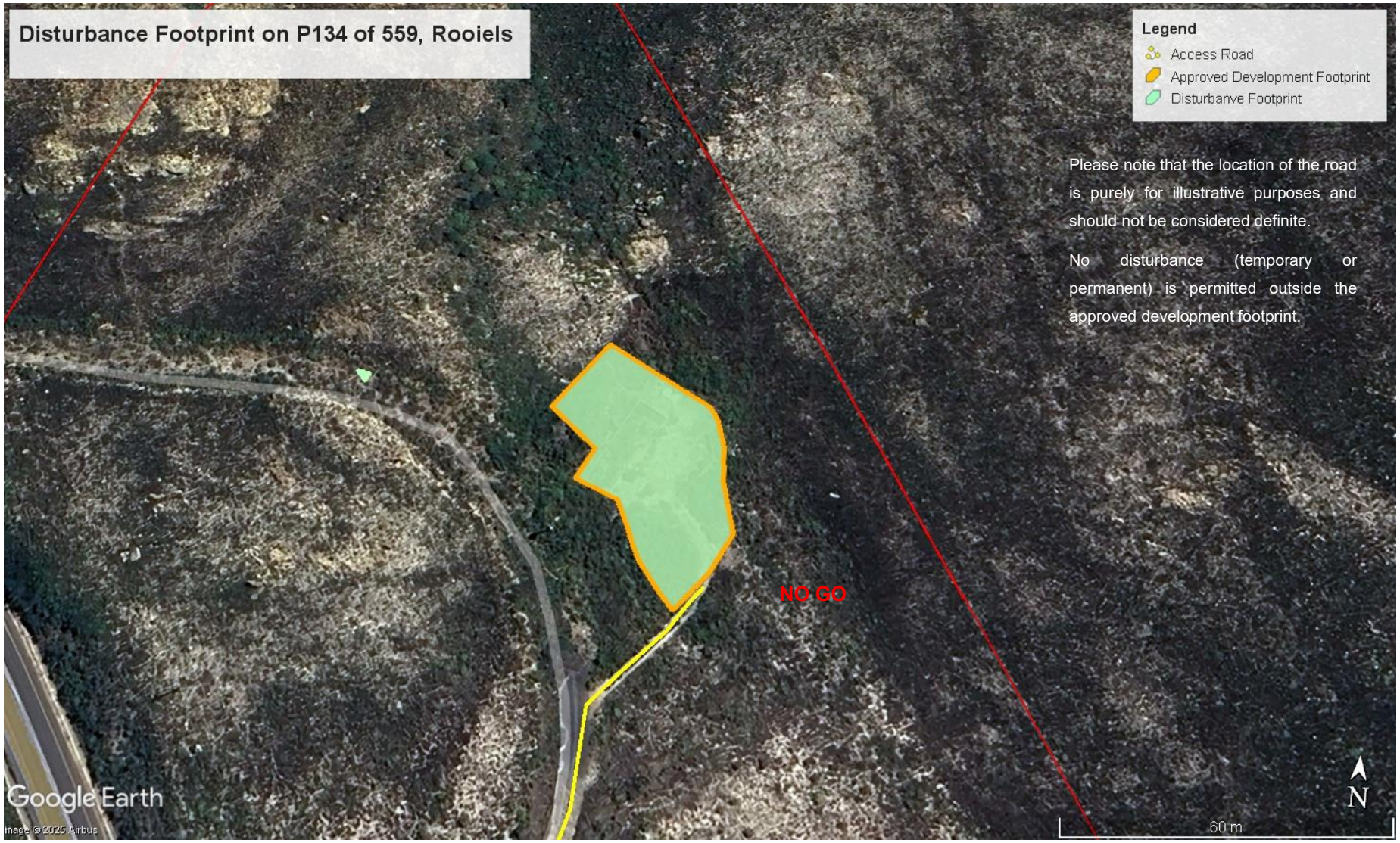
Issues of non-compliance noted by the ECO are to be communicated to the Site Manager, who holds the responsibility of ensuring that the relevant parties are made aware of the lack of compliance with EMPr specifications, and that appropriate action is taken to rectify the situation. Issues of non-compliance must be reported in the required ECO site visit report. The ECO will advise on appropriate corrective actions when necessary.

Appendix A: Preferred SDP Rooi Els project


STORMWATER RUNNOFF
LOWEST POINT OF STRUCTURE AT 116.25m
peg
peg
18980
25840
28830
119m
120
APPROVED DWELLING
ALLOWABLE PERIMETER FOR DEVELOPMENT
5490
14045
27490
OUS ROAD
PL
anchor cable
TP
anchor cable
118m
6685
9250
HIGHEST POINT OF STRUCTURE AT 120m
120m
current water flow
peg
119m
APPROVED DWELLING - SITE PLAN
PORTION 134 (A PORTION OF PORTION 133) OF THE FARM HANGKLIP NO.559
ROOI ELS
OWNER
ARCHITECT
LEGOCY VANDERSTRAETEN STUDIO
GV ARCHITECTS
GISELE VANDERSTRAETEN & LEGOCY VANDERSTRAETEN STUDIO
2
DATE
7TH JULY 2025
SCALE
1 : 100
DRAWING NUMBER
GJ-RE-599 - 2 - TWO
LOCAL AUTHORITY DRAWING


LOWEST POINT OF STRUCTURE AT 116.25m
peg
peg
APPROVED DWELLING
ALLOWABLE PERIMETER FOR DEVELOPMENT
NEW GARAGE
HIGHEST POINT OF STRUCTURE AT 120m
current water flow
STORMWATER RUNNOFF
25840
26830
26580
10765
7225
7030
14010
119m
120m
118m
peg
PL
TP
anchor cable
anchor cable
Total Development Footprint in m²
Ground floor: 216
First floor: 561
Total residence 777
Conservancy tank 9
Garage part 1 255
Garage part 2 328
Total garage 583
Total footprint (gr flr+ cons tank+ garage) 808
Total approved footprint: 1155
Development Footprint Proposed Garage in m²
Proposed Garage 328
Total footprint of approved dwelling ,garage, conservancy tank 480
Total proposed footprint now 808
Total approved footprint 1155
APPROVED DWELLING WITH NEW PROPOSED GARAGE
PORTION 134 (A PORTION OF PORTION 133) OF THE FARM HANGKLIP NO. 559
ROOI ELS
OWNER
ARCHITECT
LEGOCY VANDERSTRAETEN STUDIO
GV ARCHITECTS
GISELE VANDERSTRAETEN
& LEGOCY VANDERSTRAETEN STUDIO
2
DATE 7TH JULY 2025
SCALE 1 : 100
DRAWING NUMBER GJ-RE-599 - 2 - ONE
LOCAL AUTHORITY DRAWING

Appendix B: Construction Disturbance Footprint associated with Preferred SDP



Appendix C: Fire Evacuation Plan

Fire Evacuation Plan: Portion 134 of Farm 559, Rooiels

12 December 2023

Objective: It is in the best interest of all parties, particularly the landowners, that an active Fire Evacuation Plan is put in place. This document serves as the Fire Evacuation Plan for Portion 134 of Farm 559, Rooiels.

Plan review date: Annual review on/before 31 October of each year (before the onset of the fire season).

Sound of the alarm: a fire alarm with a "pull station" that will be audible throughout the developed area of Portion 134 of Farm 559, Rooiels, will be installed in both the garage and the main dwelling.

Responsible person / Fire Marchal: Owner of Portion 134 of Farm 559, Rooiels, (Mr. Gerhard Joubert) or responsible party as designated.

Collection point: R44 Emergency Lane just outside the property or if required, the village of Rooiels or Pringle Bay as determined by incident specific conditions.

Emergency Contact numbers:

Gerhard Joubert: 083 285 2958

RERA: 028 312 2400

RESA (Rooiels Security Association): 028 273 8089

Greater Overberg FPA: 028 425 1690

Cape Nature Hermanus: 028 314 0062

Driver / Rider Support Group: WhatsApp group to be established

Immediate neighbours: WhatsApp group to be established

Overberg Municipality: 028 313 8000

Kleinmond Police: 028 271 8200 / 082 576 2785

Gordons Bay Police: 021 856 1207 / 021 956 2677

Western Cape Emergency line: 10177 incl Ambulance Service

Plan Placement:

A copy of the Fire Evacuation Plan will be put up at each exit door of the garage and a copy will be kept at the main dwelling. All Emergency Contact Numbers and step by step evacuation actions will be clearly indicated.

Supporting Documents or Memberships:

The owners of Portion 134 of Farm 559 are, and will remain, members of the Rooiels Rate Payers Association (RERA). Through this membership they will have access to the numerous forums provided by RERA and the surrounding town forums including emergency contacts as provided at the end of this document, the Rooiels Security Association (RESA) and the Rooiels Disaster Management group (REDI).

The stipulations in the Fire Management Plan (FMP), and warnings as may occasionally be issued by authorized parties (such as Cape Nature), will be duly implemented, and followed.

The landowners will maintain membership of the Greater Overberg Fire Protection Association and follow their Facebook and WhatsApp groups to ensure contact and active monitoring of potential fire risks.

These forums, groups and communication tools are key to early detection and fire monitoring.

Site Location and Evacuation Route:

Erf 134 is located just off the current R44 outside Rooiels, direction Pringle Bay. The old R44 runs through the property providing clear and open access to the current R44. The old R44 will be the **evacuation route** giving direct access to the current R44.

Garage layout and Vehicle Access:

The garage lay-out is envisaged to have dual large garage door access and all vehicles are foreseen to be parked in such a manner that they can easily be moved out of the garage. In case of an evacuation this will allow for a quick exit and direct access to the evacuation route.

Since the cars are all in a running condition and will be maintained for frequent use, they will be in a condition that will allow them to be started and driven away. Charging equipment and a portable jump start battery will be available on site.

Since the motorcycles are all in a roadworthy condition and will be maintained for frequent use, they will be in a condition that will allow them to be started and driven away. Since they are mostly without electric starters (kick start only) a battery driven paddock starter (bump starter) for motorcycles will be available on site.

Safe Zone / Collection Point:

The collection point after evacuation will be the R44 Emergency Lane just outside the property. If the circumstances require, the collection point will be announced to be the village of Rooiels or Pringle Bay (depending on incident specific conditions such as wind direction and strength, authority guidance etc.).

Driver / Rider Support Group:

To assist in moving the vehicles in the case of an evacuation the owner will establish a support group of interested parties that can assist in the case of an evacuation. This will include immediate community members and members of surrounding communities (friends, family and like-minded groups like the Vintage Motorcycle Club (VMCC)). Since driving / riding these vehicles requires experience an annual training and driving / riding meeting will be arranged for members of the Driver / Rider Support Group. This meeting will be used as an annual evacuation drill. A WhatsApp page will be created for this group to ensure a group specific communication channel.

In the event of an evacuation, the Driver/Rider Support Group will meet at the designated collection point where transport to the site will be provided. Return transport for the drivers/rider support group from the collection point back to Erf 134 will be provided until such time as all vehicles are moved to safety.

Fire Management Equipment:

The on-site equipment that will be used for firefighting (e.g. water cart and pumps, water tanks, small tractor, bush cutter, etc.) will be maintained and tested at the beginning of every fire season. All equipment will be in good operating condition. Fire lanes will be maintained as per the guidelines.

Evacuation Plan

1. The occupants of Portion 134 of Farm 559 will be alert and act on all visible fire threats. The occupants will actively monitor fire status through relevant groups (Greater Overberg FPA, RERA) and community contacts.

2. Should a fire be detected or reported within the area, the Fire Mashall (landowner or responsible individual as designated) on duty for Erf 134 at the time shall take responsibility for relevant decisions, timelines, and communication.

3. Should the circumstances require it, the Fire Marshal will trigger the onsite fire alarm to alert all present on Erf 134 at the time.

4. The Fire Marshall on duty shall notify all relevant parties immediately by calling relevant emergency numbers, authorities, and neighbours to inform them of the fire. The Fire Mashall shall ensure that all parties on the property at the time are aware of the fire and all related decisions.

5. The Fire Marshall shall immediately send an alert notification to the Driver / Rider Support Group to notify them of the emerging situation.

6. The Fire Mashall and all those present onsite shall ensure ALL fire management mechanisms are operational and ready to be deployed (water supply, fire extinguishers, fire truck, etc.).

7. Should a fire threaten Erf 134, the Fire Marshal in conjunction with relevant authorities shall determine the severity and threat thereof.

8. Where possible and if required, the Fire Marshal must make a timeous evacuation decision noting that at least 2 hours may be required for evacuation.

9. When an evacuation decision is made the Fire Marchal must immediately notify the Driver / Rider Support Group as well as all relevant parties of the next action steps, evacuation timeframe and the designated collection point.

10. The Driver/Rider Support Group must meet at the designated collection point as communicated within the evacuation notification where transport to the site will be provided.

11. The Fire Marshal together with relevant parties must prepare all vehicles for evacuation and ensure gates and locks (if applicable) are open and ready for free evacuation.

12. Once the order is given, all vehicles must be moved in a controlled manner to the designated Collection Point using the Evacuation Route

13. Once a vehicle is secured at the Collection Point Driver / Rider will return to Erf 134 with the provided transport and move the next vehicle. Return transport for the drivers/rider support group from the collection point back to Erf 134 will be provided until such time as all vehicles are moved to safety.

14. The Fire Marshal must inform all relevant parties once the evacuation has been successfully completed.

RESA Contact Numbers

Name	Cell	Landline
RESA Office		028 273 8089 028 273 8095
Diarmuid	082 777 7346	021 685 1116
Dick	083 454 3964	028 273 8852
Duncan	083 229 7748	031 202 9994
Mark	082 784 6754	021 671 2790
Wessie	082 800 1818	
Ina	076 717 1675	

ASK Contact Numbers

Name	Cell	Landline	E-mail	Fax
Kleinmond Head Office		028 271 3116	admin@asksecurity.co.za accounts@asksecurity.co.za	028 271 4503
M Kiessling (Managing Director)	082 261 0005		michael@asksecurity.co.za	
W. Kruger (Operations Manager)	076 892 7841		wayne@asksecurity.co.za;	
J. Pretorius (Ops Ass Manager))	073 781 8583		johan@asksecurity.co.za	
R. Heidmann (Technical Manager)	079 491 1444		technical@asksecurity.co.za	
Central number	086 1888 447			
24 Hour Emergency number	082 345 5305			
Pringle bay Response number	072 345 3041	028 273 8695		
Rooiels Response number	079 891 1624	NIGHT ONLY		

Emergency Contact Numbers

Name	Contact
Kleinmond Switchboard	028 271 8400
24 Hour Emergency Control Room	028 313 8111
Fire Department	028 312 2400
Traffic Department	028 313 8111
Overstrand Law Enforcement	028 313 8111
SAPS Kleinmond SAPS Gordons Bay	028 271 8202 021 856 2677
MCM Pouching	028 313 2703
WWF Kleinmond Pierre083 236 2924	NSRI 028 312 3180
Marine & coastal Management	028 313 1166
Marine & coastal Johan Fouche	084 408 6159

Name	Contact
Ambulance	10177
EMO	072 996 6337
EMR	076 585 0899
ER24	084 514 8454
NETCARE 911	082 911
Hermanus Provincial Hospital	028 313 1166
Hermanus Private Hospital	028 313 0168
Snake Catcher Ernst Thompson	082 333 1543
Snake Catcher Jeoff Harris	082 964 1721
Medical emergency numbers Morne LLoyd	028 273 8931 028 273 8116 082 894 3019

Rooiels Shop Wimpie Emile	 076 524 3688 072 421 8090
Drummond Arms	028 273 8458

ESCOM: 0860 037 566

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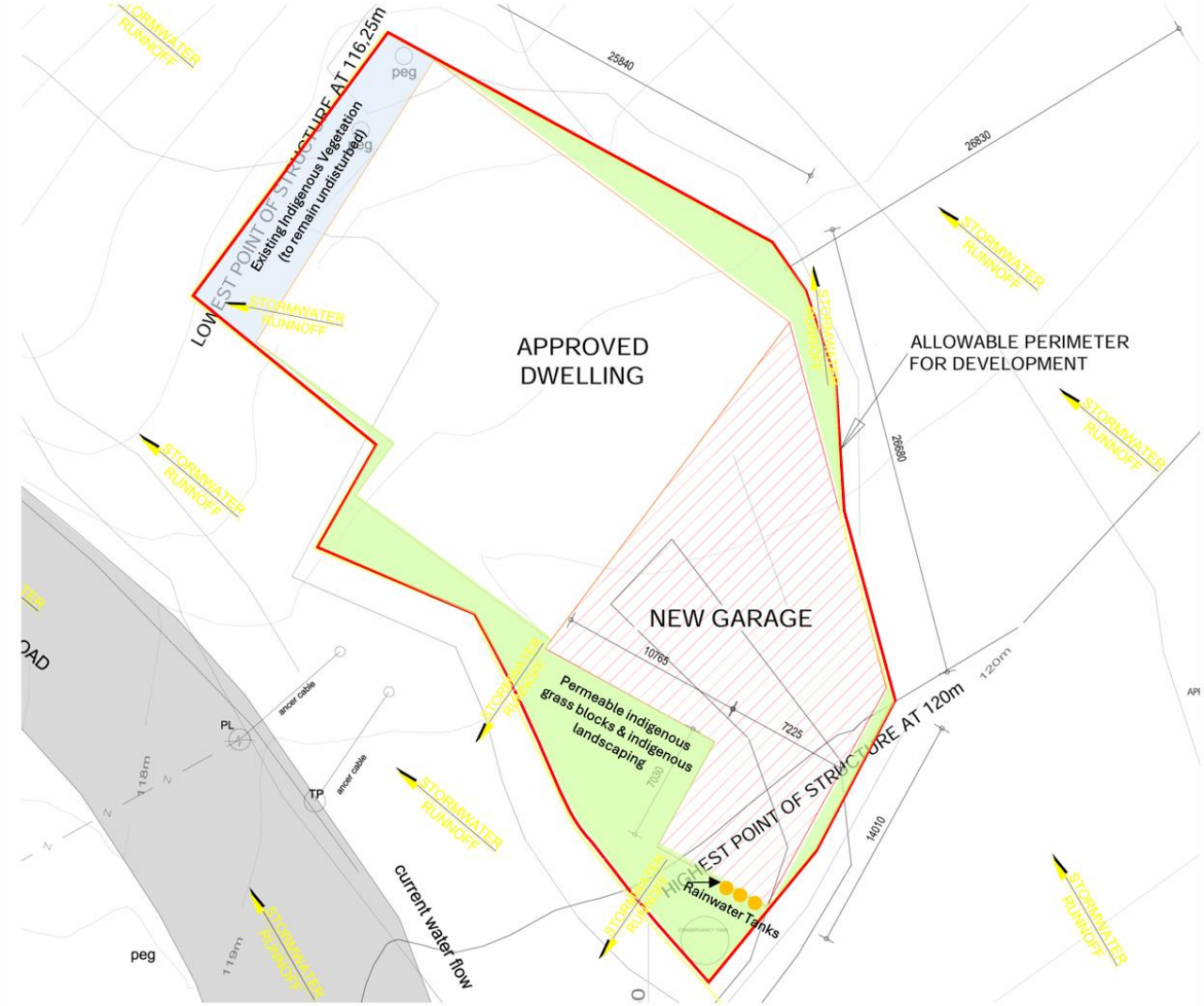
Appendix D: Concept Stormwater Runoff Plan



Appendix E: CV of EAP

CURRICULUM VITAE of AMANDA FRITZ-WHYTE

ENVIRONMENTAL SCIENTIST & GEOLOGIST

1. PERSONAL DETAILS

Born:	17th July 1974
Nationality:	South African
Drivers License:	Code EB
Languages:	Proficient in English and Afrikaans

2. KEY COMPETENCIES

After completing a BSc Honors degree in geology and two years of mining geology experience, I was nominated onto the AngloGold Ltd Young Highflyer Program. Whilst on the program I was exposed to environmental management and was provided the opportunity to develop myself in that field of interest. I now hold a Master of Science degree in Water Resource Management and more than 23 years of environmental management experience.

During my career to date, I have accumulated experience in the following key areas:

Competencies	Key Experience
1. Water Management	• MSc in Water Resource Management (distinctions in two subjects) • Environmental Coordinator: Water (AngloGold Ashanti) • Water Use License Applications, General Authorizations and Existing Lawful Use verifications and registrations • Compilation of water management strategies/ plans for both the KOSH & West Wits areas • Management of wastewater treatment plant at Toyota SA Manufacturing • Wastewater management and pollution prevention (industrial) • Inter-basin pumping schemes (flood prevention) in mining (KOSH & West Wits area). • Industrial pollution control (planning, design & implementation) • Water management plan for OR Tambo airport • WSI and brine disposal authorisations

	• Water Tribunal Appeals • Existing Lawful Use determinations and V&V for various landowners (Western Cape)
2. Environmental Monitoring Programs	• Groundwater monitoring program for Toyota SA • EMP's for Coastal Disaster Rehabilitation projects and various construction projects • Maintenance Management plans (dams in Western Cape)
3. Environmental Management Systems	• Assistant in implementation of electronic EMS at AngloGold Ashanti operations • Implementation & Management of EMS for various plants at Toyota SA Manufacturing (Durban)
4. Environmental Assessments	• Risk Assessments conducted for large scale capital projects at AngloGold Ashanti • Basic Assessments for Coastal Disaster Rehabilitation projects (KZN) and construction projects (Western Cape and KZN) including Public Participation per project • S21(c) and (i) risk matrix assessments for determining impacts under the NWA • EIA for Mining Right expansion (Steyn's Quarry, Botrivier) • Risk assessment as part of Water Use License applications (Shoprite, PEPKOR, Caledon Mixed use development, Ackermans, Transnet)
5. Environmental Auditing	• Lead Auditor Toyota SA • NEMA compliance audits for mining • ECO for various construction projects • Water Use License audits (Shoprite Checkers (Pty) Ltd, Elgin Free Range Chickens & PEPKOR)
6. Geology	• BSc Honors degree (Geology, Biochemistry) • Two years underground mining geology experience • 4 years diamond evaluation and certification experience
7. Energy & Emissions	• Compilation of CO_2 inventory for Toyota SA

8. Capital Project Management	• Wastewater plant upgrade for Toyota SA
9. Training	• Training to middle management at Toyota SA Manufacturing on HSE course • Mentorship to Archaeology student Anja Huisamen (2017-2018) • Guest lecturer on Water Management Course (hosted by DWS) • Mentorship Candidate EAP

3. TERTIARY EDUCATION

3.1 Master of Science in Water Resource Management

Year/s of study:	2005 - 2006
Institution:	University of Pretoria
Course Modules:	Strategic Environmental Management Water, Sanitation and Treatment Water Quality Management Water Conservation & Demand Management Environmental Analysis, Assessment & Modeling Environmental Paradigms Environmental Governance
Thesis:	***Towards finding a solution to the KOSH inter-mine water management problems.*** (Refer to Section 4.5 for details).

3.2 Bachelor of Science Honours in Geology

Year/s of study:	1997 - 1998
Institution:	University of Port Elizabeth
Subjects:	Igneous petrology, Sedimentology, Structural Geology, Oceanography
Thesis:	Structural geology formations on a farm near Steytlerville (Cape Fold Belt)

3.3 Bachelor of Science

Year/s of study:	1993 - 1996
Institution:	University of Port Elizabeth
Major subjects:	Geology, Biochemistry
Other subjects:	Mathematics 1, Botany 1 & 2, Chemistry 1 & 2, Physics 1

4. EMPLOYMENT RECORD

4.1 Current

Designation: Environmental Assessment Practitioner

Period: May 2016 to current

Key responsibilities: Conduct EIA's, Basic Assessments, Setback Line applications, Water Use Authorizations, General Authorizations, S24G applications, Water Services Intermediary and Brine disposal authorizations, Mining Permit and License applications, S102 applications (including public participation requirements for all the listed processes as needed according to stipulations in NEMA). NEMA compliance audits, water audits, ECO work, social and labour plan compilations. S21(c) and (i) risk matrix assessments for determining impacts under the NWA, environmental awareness plans, EMP's, Alien invasive management plans, mining plans and Maintenance Management Plans. Public Participation is conducted as part of BAR, EIA and WULA processes. ELU and V&V determinations, Water Tribunal appeals.

4.2 Freelance/ Self-employed

Designation: Geologist/ Environmental consultant

Period: July 2011 to April 2016

Key responsibilities: Conducted all environmental work (comment on EMP's, comment on new legislation, submission to NWRMS parliamentary sub-committee, submissions to legal advisors and other NGO's) for TKAG.

Lobby Minister Anton Bredell for the establishment of the CoCT sludge to land application monitoring committee for Melkbosstrand / Philidelphia area.

Oversee BAR for Melkbosstrand High School Sports Fields and completed ECO work.

Geological work: Gemological work (evaluation and certification) of diamonds for clients. Registration process

for Diamond Regulator and Mining Right Conversion from Old Order Mining Right.
Prospecting work on site for diamond bearing gravels.

Reason for leaving: Moved back into full time formal employment sector

4.3 Enspire Environmental

Designation: Director

Period: June 2010 to July 2011

Key responsibilities: Manage all aspects of business for the KZN South Coast region: BAR's; EIA's; WULA's; S30 applications; S24G applications; waste management; auditing; ECO work, water management, preparation and submission of tender documents for large local government projects. Public Participation is conducted as part of BAR, EIA and WULA processes.

Reason for leaving: Relocated from KZN to Cape Town and resigned as Director of company

4.4 SSI Environmental

Designation: Associate

Period: March 2008 to May 2010

Key responsibilities: Develop client relations and deliver service to clients on the Kwa-Zulu Natal South Coast in the following areas:
BAR's; EIA's; WULA's; S30 applications; S24G applications; waste management; auditing; ECO work, water management, preparation and submission of tender documents for large local government projects in KZN and Nelson Mandela Metro. Green city competition coordinator on behalf of NMM.
Office manager: Business development, management of staff, budget reporting.
Compilation of water management plan and strategy for OR Tambo Airport.
Public Participation is conducted as part of BAR, EIA and WULA processes.

Reason for leaving: Had to downscale on amount of travelling due to the birth of my son.

4.5 Toyota South Africa Manufacturing (Durban)

Designation: Environmental Manager

Period: January 2006 to February 2008

Key responsibilities: Implement, maintain and audit EMS for various plants making up the Toyota SA manufacturing operations. Responsible for water management on site – effluent treatment plants, resource measurement, recycling opportunities and reduction in usage.

Implementation of anti-pollution measures on site (moving pipelines overhead, interception trenches and containment pits).

Reporting environmental performance to top management.

Budget compilation and tracking.

HSE advisor to new Warehouse Project. CMA representation on behalf of TSAM.

Reason for leaving: Head hunted by consulting firm

4.1 **AngloGold Ashanti: Environmental Management Department**

Designation: Environmental Coordinator: Water

Period: November 2001 to December 2005

Throughout this period, I was involved in the following key projects:

Project / Technical Area	Personal Involvement
Water management strategy addressing mine dewatering in the KOSH area This project involved developing a water management strategy to address the risk of deep-level gold mines in the Klerksdorp, Orkney, Stilfontein, Hartebeesfontein (KOSH) area flooding should neighbouring mines cease dewatering operations	• Compiled and interpreted historical data relating to fissure water quality, volumes and water balances; • Interpreted the 3D geological mining model for inter-basin water transfer; • Developed flow models; • Generated options for re-use of the fissure water; • Compiled a regional water management strategy for AGA mining area;

	• Facilitated KOSH Inter-Mine Forum meetings; • Created awareness with DWAF and DME at national and regional levels in regards the strategy and obtained their process requirements.
Water management strategy to allow for closure of the West Wits area This project involved developing a water management strategy to allow for closure of deep-level gold mines in the West Wits Area.	• Investigated pillar stabilities, fissure water sources and water balances; • Identified major environmental liabilities for AngloGold Ashanti and for the area; • Compiled a water management strategy linked to closure plans and the re-watering of underground compartments.
Water Management	• Conducted a financial evaluation on the proposed Waste Discharge Charge System (WDCS) and the local council takeover as water services provider; • Facilitated the compilation of catchment models for the Vaal River Area; • Managed the compilation of clean/dirty water assessments on all 25 AngloGold Ashanti SA business units; • Managed the compilation of a groundwater liability report covering AngloGold Ashanti SA Region; • Participated in workshops for Integrated Water Management policy for the Mining Sector on behalf of AGA; • Contributed to water management assessments for closure of Savuka Mine and Domain 3 area. • Represented the company at various fora, including Randwater; FWRDWA Licensing Sub-Committee, Kromdraai Licensing Forum; KOSH Inter-Mine Forum and WISA Mine Water Division. • Compiled water discharge licence application for West Wits Area; • Coordinated studies and funding agreement for Yellowfish genetic research projects; • Compiled the “Water management’ section of the Global reporting Initiative for AngloGold Ashanti

	SA; • Compiled environmental performance assessment reports for WUDL boreholes and extent of compliance reports for three business units.
Environmental Impacts Assessments (EIAs) EIAs were compiled for these two projects in the Vaal River Area: • Reworking of Rock Dumps (R150M) • Re-commissioning of West Pay Dam Tailings Storage Facility (R20M)	• Compiling background information for the EIAs; • Coordinating consultation meetings with key government departments; • Internal review of the draft EIA reports; • Ensuring project deadlines and budgets were met.
Emergency Preparedness Planning	• Assisted with emergency preparedness planning for tailings storage facilities in the West Wits Area.

Reason for leaving: To expand my career experience beyond the mining sector

4.2 **AngloGold Limited: Corporate Office**

Designation: Executive Assistant to Executive Officer SA Region
(Appointed on AngloGold Ashanti's Highflyer Program)

Period: August 2000 – October 2001

Key responsibilities: I was responsible for the following:

- Sourcing and compiling required information for the Executive of SA Region
- Coordinating and recording SA Exco, Management and Strategic Meetings for Executive
- Compiling the weekly Gold and Safety Report
- Compiling the Business Plan: 2002 for SA Region operations.

Reason for leaving: Completed the Highflyer Program

4.3 **AngloGold Limited: Tau Lekoa Mine**

Designation: Geologist (Manager in Training)

Period: June 1999 – August 2000

Key responsibilities: I was responsible for the following:

- Assisting the Senior Geologist with structural mapping underground, interpretation and providing an advisory service to the Mining Department.
- Managing own section in regards scheduling of work which included mapping, interpretation and advice;
- Logging of drilling core and interpretation thereof.

Reason for leaving: Selected for Highflyer Program (see above)

4.4 **AngloGold Limited: Great Noligwa Mine**

Designation: Geologist (Manager in Training)

Period: May 1998 – June 1999

Key responsibilities: I was responsible for the following:

- Assisting the Senior Geologist with structural mapping underground, interpretation and providing an advisory service to the Mining Department.
- Logging of drilling core and interpretation thereof.

Reason for leaving: Career development opportunity within the company.

5. COURSE / CONFERENCE PARTICIPATION

5.1 **Short courses completed**

Technical skills

- Waste management for Environmental Managers (PUCHO, 2002)
- Water Quality Management (Technikon Pretoria, 2002)
- Water Quality Management for Environmental Managers (PUCHO, 2002)
- Water Quality Monitoring (PUCHO, 2003)
- Introduction to GIS (PUCHO, 2001)
- MS Word, Excel, Access, PowerPoint, Projects, ArcGIS, ArcView, ArcInfo
- Air Quality Modeling (PU, 2007)
- Pump Course (SAIME, 2007)
- Windeed (2008)
- Internal Project Management SSI (Modules: General business principles; General contract principles; Risk Awareness; OHS; Service Quality) (2008)
- Biodiversity Offset training workshop (SANBI, 2018)
- Water Governance (2019)

Environmental processes

- Environmental Risk Assessment (PUCHO, 2001)
- Environmental Impact Assessment (PUCHO, 2001)
- Environmental Law (PUCHO, 2001)
- Environmental Auditing (PUCHO, 2001)
- Issue-based Risk Assessment (ATDS Learning Centre, 2000)
- New EIA Regulations (2006)

Project-management and leadership

- Business Presentation Skills (Maccauvlei Training Centre, 1999)
- Industrial Relations (Maccauvlei Training Centre, 2000)
- Finance for Non-Financial Managers (Maccauvlei Training Centre, 1999)
- Leadership for Middle Managers (Maccauvlei Training Centre, 1999)
- Middle Management (Maccauvlei Training Centre, 1999)
- Emotional Intelligence Course (AngloGold Ashanti, 2004)

Geological

- Diamond Drilling Techniques (ATDS Learning Centre, 1999)
- Rough Diamond Evaluation Course (Harry Oppenheimer Training School, 2011)

6. LIST OF PROJECTS TO DATE

Project Name	Year	Role of EAP
Proposed Riverbank Stabilization Measures to Address Flood Damage at Riverside Park, Umzinto	2009	Review of BAR, EMP, PPP for all aspects of application
KZ 212 MAL 16: Basic Assessment for the Umdoni Storm Damage remediation in Malangeni, Umdoni Local Municipality.	2009	Review of BAR, EMP, PPP for all aspects of application
KZ212Mal17&18: Malangeni Road reconstruction, stormwater controls and gabion protection at stream crossings.	2009	Review of BAR, EMP, PPP for all aspects of application
KZ 212 PR6: Storm damage repairs and upgrades at Park Rynie, Umdoni Municipality	2009	Review of BAR, EMP, PPP for all aspects of application
KZ 212 UMZ 11 and 9: Consolidated Basic Assessment for the Umdoni Storm Damage remediation in Umzinto Main Road & Alexandra Crescent, Umdoni Local Municipality.	2009	Review of BAR, EMP, PPP for all aspects of application
KZ 212PR1& KZ212PR13: Consolidated Basic	2009	Review of BAR, EMP, PPP for all aspects of application

Assessment for Stormwater control and damage repairs in Park Rynie Beachfront Parking and Lotus Park		
Basic Assessment for the 2008 Flood Disaster Project, KZ212 UMZ6 (Esperanza)	2010	Review of BAR, EMP, PPP for all aspects of application
Tidal Surge Rehabilitation work for Northern and Southern Beaches (Hibberdene Main Beach, Umzumbe Main Beach, Pumula, Banana Beach, Sunwich Port Main Beach, South Port Main beach, Umtentweni, Silver Beach, Shelley Beach, Peter Pan Beach, Glenmore and Munster, Palm Beach, Southbroom)	2008	Compilation of application, PPP, all aspects of applications
Hibiscus Coast Tidal Surge port Shepstone: Elizabeth drive Rehabilitation project	2008	Compilation of application, PPP, all aspects of applications
Tidal Surge Rehabilitation of Central Beaches located at St Michael's on Sea, Uvongo, Manaba, Margate and Ramsgate	2008	Compilation of application, PPP, all aspects of applications
Proposed residential Grieg house in Kelso	2008	Compilation of application, PPP, all aspects of application
Basic assessment for the re-development of Marlicht Holiday Resort in Margate,	2010	Compilation of application, PPP, all aspects of application

KwaZulu Natal		
Mbango Sewer Line	2008	Compilation of application, PPP, all aspects of application
Proposed Rehabilitation of Rural Roads within Hibiscus Coast Local Municipality.	2010	Review of BAR, EMP, PPP for all aspects of applications
Ugu District Municipality – Scottburgh Sewage Works Tidal Surge Repairs	2008	Review of BAR, EMP, PPP for all aspects of application
Proposed Removal of Tidal Pool in Southbroom, Hibiscus Coast Local Municipality	2010	Review of BAR, EMP, PPP for all aspects of application
Umdoni Beach Rehabilitation – Phase 2	2008	Compilation of application, PPP, all aspects of application
Agulhas Erf 854 Setback Line Application	2016	Compilation of application, PPP, all aspects of application
Basic Assessment P90 of Farm 587, Hemel en Aarde	2016-2017	Compilation of application, collation of specialist input, PPP, EMPs, all aspects of application
S102 amendment (Scoping and EIA) Steyns Quarry, Botrivier	2016-2019	Verification of S102 process with DMR; Compilation of scoping and EIA reports, collation of all specialist input, PPP, all aspects of application process (both NEMA and MPRDA processes)
Basic Assessment for On The Earth Tented Camp, Elgin	2018	Compilation of application, PPP, EMPs, all aspects of application

Basic Assessment P1 of Farm 627 Phillipskop, Stanford	2016-2017	Compilation of application, collation of specialist input, PPP, EMPs, all aspects of application
Basic Assessment P58 of Farm 406, Slanghoek	2016-2017	Compilation of application, collation of specialist input, PPP, EMPs, all aspects of application
Basic Assessment P18 of Farm 238, Stormsvlei	2018-2019	Compilation of application, collation of specialist input, PPP, EMPs, all aspects of application
Keurboomen Mine Permit application RE of P6 of Farm 191, Swellendam (Basic Assessment)	2016-2017	Compilation of application, collation of specialist input, PPP, EMPs, all aspects of application (both NEMA and MPRDA processes)
S24G authorization for Avontuur Chicken Farm, Stormsvlei	2018 to 2021	Compilation of S24G application, collation of specialist input, PPP, EMPs, all aspects of application and administration fine.
WULA/ GA/ ELU for: a) Cilmor distribution centre Shoprite b) Shoprite Constantia centre c) Shoprite GB Mall d) Shoprite Vergelegen Mall e) Shoprite Delft Mall f) Shoprite Boschenmeer Mall g) George quarry h) Botrivier sandmine	2016 to 2021	Compilation of all information for DWS; project management of specialists; justification of ELU using historical photography and water use rights; Public Participation for WULA

i) Lomond Wine Estate j) Plattekloof Farm Riversdale k) De Berg Farm Riversdale l) Groote Fontein Farm, Stilbaai m) Brown dog Farm, Franskraal n) Ocean Mushrooms Botrivier o) Elgin Free Range Farm Karwyderskraal p) Shoprite Noordhoek q) Slanghoek Mountain Resort r) PEPKOR main site Parow s) PEPKOR DC Cape Town		
WSI and Brine authorizations for Shoprite GB Mall and Constantia Mall	2018 to 2021	All aspects of project- compilation of WSI and brine disposal applications.
Water Tribunal appeals for two Shoprite sites (GB Mall and & Delft Mall)	2019 – 2021	Representing client during hearings and compilation and submission of appeal documentation.
GA for Curro Delft site	2020- 2021	Compilation and submission of all documentation to DWS.
Basic Assessment for dam expansion Dasbosch farm, Porterville	2019 to 2021	Compilation of application, collation of specialist input, PPP, EMPs, all aspects of application

Basic Assessment for dam expansion Montdry, Barrydale	2019 to 2021	Compilation of application, collation of specialist input, PPP, EMPs, all aspects of application
Setback Line Application Erf 954, L'Agulhas	2022	Compilation of application, PPP and impact assessment
Riverstone Farm Franschoek Water Due Diligence	2022	Assessment of existing lawful uses and development of water management and authorization strategy
Diepgat Farm Hemel-en Aarde Valley Water Due Diligence	2022	Assessment of existing lawful uses and development of water management and authorization strategy
Caledon Mixed use Development WULA	2022	Compilation of technical report, application process on e-wulaa
Keurboomen Mine Closure Plan	2022	Compilation of closure plan associated with identified risks and PPP – management of all aspects of closure process
Registration of General Authorizations for Baleia Wines	2022	Registration of 3 General Authorizations for various water uses on site – management of registration process on e-wulaa
Delft Mall WULA audit	2023	Audit of site against Water Use Licence and submission of findings and recommendations to DWS
GB Mall WULA audit	2023	Audit of site against Water Use Licence and submission of findings and recommendations to DWS
Riverstone ELU verification	2023	Verification and Validation of ELU water uses on site and submission to DWS
Greenacres Shoprite WULA	2023	Compilation of technical report, PPP, application process on e-wulaa
Cape Winelands Airport	2022 - 2024	Environmental Impact Assessment for

		Cape Winelands Airport project (includes compilation of application, collation of specialist input, PPP, WULA, MMP)
Water Tribunal Appeals for Dasbosch and Driebos Farms, Porterville	2023-2024	Representing client during hearings and compilation and submission of appeal documentation.
Rooiels Basic Assessment	2023-2024	Compilation of application, collation of specialist input, PPP, EMPr, all aspects of application
Ackermans DC WULA	2024	Compilation of technical report, PPP, application process on e-wulaa
Belcon Transnet WULA	2024	Compilation of technical report, PPP, application process on e-wulaa
Erin de Vigne WULA	2024	Compilation of technical report, PPP, application process on e-wulaa
De Draay WULA	2024	Compilation of technical report, PPP, application process on e-wulaa
Melkhoutrivier WULA	2024	Compilation of technical report, PPP, application process on e-wulaa

NOTE: PPP in text refers to Public Participation Process (inclusive of stakeholder meetings, advertising, compilation of IAP register and Comments and Response)

7. AFFILIATIONS AND MEMBERSHIPS:

Fellow Member WISA (Lead Climate Change Sector)
Member IAIAsa
Registered Environmental Assessment Practitioner: Number 2019/367 (EAPASA)
SACNASP Registration - Pri.Sci.Nat (118385)